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THE UNIVERSITY OF ALBERTA

INDUSTRIAL EDUCATION IN ALBERTA

ITS EVOLUTION AND DEVELOPMENT: 1968 - 1982

BY

NORMAN F. MATHEW

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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IN

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ABSTRACT

The objective of this research was to prepare an historical description of the term industrial education in Alberta. Historical overviews of vocational education and industrial arts were included to provide an adequate reference and a point of departure for the reader. Specifically this study applies to the evolution of industrial education from when it first appeared in the education literature in Alberta in 1968, until its maturity in 1982.

Documentry data were obtained through a number of sources including libraries, personal files, correspondence, telephone conversations, newsletters and reports. Personal interviews with persons responsible for, or connected with industrial education were also conducted.

A number of reasons for a change from the specific programs of vocational education and industrial arts surfaced during the research for this study. Some of the reasons were: the cost of the vocational education program; the need for a more relevant program; the need for more versatility of timetabling; more efficient use of teachers and facilities and the need for the Alberta curriculum to meet the educational needs of Albertans.

This study primarily covers the decade of the 1970s, when industrial education matured. For the 1980s, another term seems to be coming into vogue: practical arts. The development of this term could provide the basis for a study at the end of this decade.

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There were a number of librarians who aided the researcher in the various phases of this study to locate references for analysis. The work of these individuals whose identity was not recorded is also acknowledged. Without their cooperation this report would not have been possible.

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CHAPTER I

THE PROBLEM

Introduction

The beginnings of vocational education in Alberta can be traced to 1900 when the MacDonald Training Plan was placed in selected elementary schools from coast to coast. Prior to the establishment of this Plan, there is evidence to indicate that during the first part of the twentieth century private business colleges were established in the province to offer courses associated with the practical aspects of business and commerce. During that time, a number of industrial corporations in the province organized training programs that would satisfy their educational needs so that they would have workers with the necessary skills. The provincial government did not become involved with vocational education at the post secondary level until 1913, when the federal government passed the Agricultural Instruction Act. According to Bryce (1970) the monies from this Act were used to support instruction in agriculture, and colleges for this purpose were established at Olds and Vermilion. (p. 71)

Subsequent Federal legislation was enacted that provided financial support on a shared cost basis to the provinces if they would establish vocational education at the secondary school level as a means to alleviate skilled manpower shortages, and to solve other sociological problems confronting the country. The most recent of these federal enactments was the Technical and Vocational Training Assistance Act (TVTA) of 1960, which provided shared financial support between the federal government and the provinces to fund capital projects to help establish vocational education in secondary schools as well as to expand the technical education offerings at the post secondary level in participating provinces.

The term "vocational" in the Technical and Vocational Training Assistance Act and in the agreement that was signed between Ottawa and Alberta in 1961 helped to establish the term "vocational education" in the lexicon of education in Alberta. The term "vocational education" was not a new term because it first came into use in North America early in the twentieth century when the Congress of the United States in 1914 approved legislation that established the

Commission on National Aid to Vocational Education. (Barlow, 1967, p. 58) In Alberta, the term "vocational" first appeared in the 1913 annual report of the Department of Education. A year later this term appeared in a publication of the Federal Government when it was used in the 1914 Annual Report of the Department of Labour.

Educational researchers such as Smith (1973) and Harder (1964) have traced the history of industrial arts in Alberta from 1900, the year that the MacDonald Training Plan was brought into the Northwest Territories. An author who has written on the history of education in Alberta is Chalmers (1967) who also traced the beginning of industrial arts in the province to the MacDonald Training Plan. Since then this subject area has evolved and changed from manual training to manual arts, general shop, technical electives, the Alberta Plan, and more recently to Industrial Education.

Since 1968, on the educational scene in Alberta, the complementary terms "vocational education" and "industrial arts" have been subsumed under the generic term of "industrial education". The latter term was introduced to both vocational education and industrial arts teachers, as well as to teacher educators in the province, by personnel from the Department of Education when the term appeared in the Industrial Arts Newsletter of September, 1969. It was not until two years later, however, that the industrial education concept and the term "industrial education" was fully described to members of the various stake holder groups. A review of contemporary records, reports and publications from Alberta Education does not document why the change in terminology was thought necessary.

PURPOSE OF THE STUDY

The purpose of this study was to focus on and describe the evolution and development of the industrial education concept and how this concept helped to synthesize vocational education and industrial arts under this generic term. The target program of this research was industrial education at the secondary school level which is administered by local School Boards. Post secondary industrial education, technical education, and out-of-school industrial education programs, such as apprenticeship training or in-plant training, were not part of this investigation.

Supporting Objectives

This study had the following supporting objectives:

1. To determine the role that personnel from the Curriculum Branch of Alberta Education had on imposing the industrial education concept on the education structure of the province;
2. To show the influence that the industrial education concept had on the time allotted to vocational education programs in the high schools of the province, as well as on the industrial arts programs at both the junior high school and senior high school levels;
3. To determine the influence that the industrial education concept has had on curriculum design and development for both vocational education and industrial arts; and
4. To identify the various influences which led vocational education and industrial arts teachers to accept and adopt the industrial education concept in Alberta.

LIMITATIONS

A descriptive study with a provincial orientation requires that the researcher review and conduct a documentary analysis of primary documents shelved or held in storage in libraries and archival collections of the University and the Department of Education as well as in the private collections of retired educators whose area of specialization was either industrial arts or vocational education. There was a possibility that the documents found in these repositories or that were held by individuals may have been incomplete. This may have imposed a limitation on this research. Another limitation may have occurred because the individuals may have considered some documents to have had no significance and may have therefore discarded those documents.

There may have been other sources of information that were held by the vocational education or industrial arts teachers that were unavailable to the researcher for review. The inability of the researcher to identify these information sources placed another limitation on this study.

A third limitation of this study was the fact that the study was completed some twelve years after the term "industrial education" was first introduced to

vocational education teachers, industrial arts teachers, teacher educators and administrators in the province. Because of this time lag, there was the possibility that many of the important facts and reactions of teachers and vocational education leaders were not recorded, or that these facts may have become blurred in the minds of the educational leaders who were interviewed and who provided data for the research.

It is possible that the people identified to be involved in the interview stage of this study may have held a bias either for or against the industrial education concept. This bias could have imposed a limitation on the study.

A preliminary review of the professional literature revealed that little had been written on how the term "industrial education" developed in Alberta. This paucity of resource material might have imposed a fifth limitation on this study.

NEED FOR THE STUDY

To help establish a need for this study a preliminary review was made of resource material that would be used in the research. From that review a number of studies completed by Albertans were identified. These studies could be classified as historical studies. Among these were the investigations completed by Harder (1964) The Development of the Industrial Arts Program and its Present Status in the Province of Alberta; Bryce (1970) The Technical and Vocational Training Assistance Act of 1961-67: An Historical Survey and Documentary Analysis, Grywalski (1972) A History of Technical Vocational Education in the Secondary Schools of Alberta, 1900-1969; Smith (1973) The Development of the Industrial Arts Multiple - Activity in Alberta; and Clarke (1982) A History of Vocational Education in The Calgary Public School System 1900-1982.

Each thesis or doctoral dissertation was reviewed to determine if any of these researchers included a description of how the industrial education concept evolved in Alberta. The results of that review were negative. Because of this void a major need for the study was established.

Upon completion of this study this void should no longer exist because the results of this research should provide a valuable reference source for those interested in the industrial education concept and its development in Alberta.

Another need for this study was the fact that no other study that was identified made an attempt to trace how the industrial education concept evolved to its present status in Alberta.

MAJOR ASSUMPTION

The major assumption of this study was that information contained in the primary resources that were reviewed from provincial agencies, non-government agencies, or private individuals that provided data on the status of the industrial education concept was authentic and that the content of these resources was valid.

The assumption would be supported by Van Dalen (1962) who cautioned educational researchers undertaking descriptive research using documentary analyses.

> Printed and written materials are not necessarily accurate. Sometimes clerks make errors in recording information; committee members conceal their real convictions when writing reports; official records are altered or slanted to give a better picture of conditions than actually exists; different types of data are classified under the same category by various institutions; . . . personal documents such as diaries, autobiographies, or letters are forgeries or attributed to the wrong author. (p. 194)

It was assumed that the information given to the researcher, by those educational leaders selected to be interviewed, was accurate. There was no evidence to cause doubt about the statements made by those interviewed, as they all agreed on key facts.

SIGNIFICANCE OF THE STUDY

During the preliminary phases of this study, a review was made of archival material such as: minutes of curriculum meetings, memoranda between the Minister of Education and his associates, annual reports, programs of study, and curriculum guides that were held in dead storage in the various locations. It was found that a limited amount of reference material was available which described the evolution of the industrial education concept as it pertains to Alberta. It was hoped that the results of this study would fill that resource gap by adding to

the available literature on the evolution and development of the industrial education concept.

Additional significance may have been added to this study because its results may be useful for those who are concerned with curriculum changes that have resulted from the concept of industrial education being instituted by Alberta Education and becoming part of the educational structure of the province. The results of this study may have significance for other researchers who are concerned with curriculum design and development for industrial arts and vocational education, and the influence that the industrial education concept has had on both of these subject areas.

The final report of this research may have significance for those individuals who are concerned with preparing adolescents for the world of work because it will show the influence that the industrial education concept had on the credit structure for occupational education programs at the secondary school level.

OPERATIONAL DEFINITIONS

Operational definitions are written by researchers in their reports for the benefit of the reader who must understand each term in order to comprehend the term and its context in the report. For the purpose of this study, the following operational definitions were selected, and were used throughout this report:

Vocational Education:

The term "vocational education" is a relatively new educational term when compared to such terms as "academic education", "scientific education" or "general education". This term first became common when it was introduced into education during the early part of the twentieth century. Since that time, the term has been modified and changed by authors and associations who have written on vocational education. In the United States The Federal Board for Vocational Education in a report in 1928 defined vocational education as "that form of education and training in any field of human activity which assists people, young and old, to get a better job, to keep a job, to improve on a job, and to believe in their job" (p. 1).

Approximately forty years later Silvius and Bohn (1961) in Organizing Course Materials defined vocational education as: "a program of specialized

education designed to provide instruction leading to occupational competency" (p. 73). However, Evans (1971) in preparing the text for Foundations of Vocational Education comments that no definition for vocational education is entirely satisfactory. Evans, however, did agree with Silvius and Bohn that vocational education is considered specialized because this form of education is not the same for all people. According to Evans, "vocational education includes education which makes a person more competent in one group of occupations than in another" (p. 53).

The above definitions for vocational education are written by American authors for use by educators in that country. These definitions are inappropriate for use in Canada because of the wide variety of terms that are used by Provincial Departments of Education for programs that are used to prepare youth for the world of work. Among the terms that are used in Canada to describe secondary school courses to prepare students for employment are: "vocational", "technical", "technical-vocational" or "industrial education". These terms do not always convey the intent of the program offered since the terms "technical" and "vocational" are often used interchangeably.

Bryce (1970) in his doctoral dissertation presents the major components for each of the eight federal acts that were legislated from 1912 to 1960. Each of these acts provided funds to support vocational and/or technical education. It was not until the enactment of the Vocational Training Coordination Act 1942 that the term "vocational training" was defined as:

> any form of instruction, the purpose of which is to fit any person for gainful employment or to increase his skill of efficiency therein, and, without restricting the generality of the foregoing, includes instruction to fit any person for employment in agriculture, forestry, mining, fishing, construction, manufacturing, commerce or in any other primary or secondary industry in Canada. (paragraph 2, subsection C)

When the Technical and Vocational Training Assistance Act 1960 (TVTA) was legislated the Federal Government included the terms "Technical and Vocational Training" in the title of the Act. It did so for a purpose. It is a known fact that training (manpower training per se) is considered a federal responsibility, while education is a provincial responsibility under the terms of the British North American Act, Section 93. According to the TVTA technical and vocational training is defined as follows:

any form of instruction, the purpose of which is to prepare a person for gainful employment in primary or secondary industry or in any service occupation or to increase his skill or proficiency in, and, without restricting the generality of the foregoing instruction for that purpose in relation to any of the following industries or occupations:

i. agriculture
ii. fishing
iii. forestry
iv. mining
v. commerce
vi. construction
vii. manufacturing
viii. transportation and communications. (TVTA, Article lb)

By comparing these two definitions it should be evident that they are almost identical with the exception that minor modifications were made to the 1960 definition. Both definitions are omnibus definitions because they are all inclusive and include programs of study at both the secondary school level - vocational education - and the non-university post-secondary school level - technical education. Implicit in the 1960 definition is two discrete target populations of Canadian society who would be served by the Act, the adolescent learner and the adult learner.

When educational authorities from Alberta signed the Technical and Vocational Training Assistance Agreement in 1961 with Ottawa, these authorities by signing that Agreement accepted the definition for technical and vocational training that was written into the Act. Because the Department of Education in Alberta has not provided a definition of vocational education to vocational education teachers the definition of the term "vocational training" found in the Act was accepted for use in this study. Both the terms "vocational training" and "vocational education" will be used synonymously throughout this report.

Industrial Arts:

The history of industrial arts in the United States predates that of vocational education. When industrial arts was first introduced into the schools of that country in 1876 it was referred to as manual training. In 1904 C. Richards suggested that the term "industrial arts" be substituted for the term "manual training", which prevailed at that time. (Bennett, 1937, p. 453) Since then, the term "industrial arts" has been used, and its definition redefined, by authors who have written on the theoretical development of this subject area.

Feirer and Lindbeck (1964) defined industrial arts as "the broad study of the tools, materials, equipment, processes, products and occupations of industry, pursued for the general education purposes in the shops and laboratories of schools" (p. 15).

More recently, this definition was expanded by a committee that included members of the Industrial Arts Division of the American Vocational Association and the American Industrial Arts Association in a draft copy of Guidelines for Industrial Arts in Career Education (1975):

> Industrial arts education is that subject which provides opportunities for all students from elementary through higher education to develop an understanding about technical, consumer, occupational, recreational, organizational, managerial, social, historical, and cultural aspects of industry and technology. It is a program whereby students acquire industrial-technical knowledge and skills through creative and problem solving learning experiences involving such activities as experimenting, planning, designing, constructing, evaluating, and using tools, machines, materials and processing. (p. 7)

The above definition is the most comprehensive that appears in the professional literature. It is an attempt to include a complete ladder of education from kindergarten through post secondary education as well as the major learning activities found in an industrial arts setting. This definition was written partially for political reasons because the thrust toward career education in the United States was at its epitome, when Sidney P. Marland was Commissioner of Education in 1971. The members of the committee who prepared the definition hoped that industrial arts would become eligible for federal funds under vocational education legislation in the United States.

The definition for industrial arts given by Moon (1975), in the 24th Yearbook of the American Council on Industrial Arts Teacher Education, was found acceptable for this study. He defines industrial arts as:

> that part of the educational program which concerns itself largely with preparing individuals to live in a technological culture. This is traditionally achieved through a study of industry by providing first hand manufacturing and service type experiences in the use of tools, materials, and processes. (p. 15)

In Alberta since 1968 personnel of the Department of Education have made every effort to include vocational education and its complementary program of study, industrial arts, under the title of industrial education.

Industrial Education:

There are a number of contemporary authors such as Freise (1958), Roberts (1965), Silvius and Curry (1971), Baird (1972), and Giachino and Gallington (1977) who have written on either curriculum development or the instructional strategies used by teachers to deliver instructional content for both industrial arts or vocational education. The textbooks that these authors have written are mainly used by teacher educators who are responsible for preparing pre-service teachers. All these authors are aware of the confusion that can result from terminology that is easily misunderstood by both the layperson and the professional educator. To clarify what the various terms mean for occupational education programs of study, these authors provide definitions that help to distinguish one type of program from another. All of these authors provide definitions for the term "industrial education".

Friese (1958) in Course Making in Industrial Education presents definitions for the following four professional terms: "industrial education"; "industrial arts"; "vocational industrial education"; and "vocational education" and proceeds to point out that these definitions are presented so that no confusion may result in the reader's mind. This author considers industrial education to be:

> a generic term including all educational activities concerned with modern industry and crafts, their raw materials, products, machines, personnel and problems. It therefore includes both industrial arts and vocational industrial education. (p. 7)

Roberts (1965) in discussing the terms used to describe programs for occupational education uses the term "vocational-industrial education" to include a wider variety of programs that are offered in both the public and private sectors of education. In explaining his definition of industrial education Roberts states that this term is to be interpreted to include courses that are given in trade schools, in technical schools, in general purpose secondary schools, in the apprenticeship system, and in an industrial environment. (p. 285) Roberts also provides a definition for each of the programs of study that might be used to provide a learner with the requisite psychomotor skills to enter the world of work. According to this author the broad field of industrial education includes general industrial education, or industrial arts and vocational-technical education. (p. 285)

The definition for industrial education provided by Silvius and Curry (1971) in Managing Multiple Activities in Industrial Education is more inclusive and

comprehensive than those given by the previous authors. The definition by Silvius and Curry includes those programs for occupational education that are internal as well as external to a formal secondary school setting. To these authors industrial education can be defined as:

> a generic term referring to industrial training, vocational-technical education, industrial arts, technical education, apprenticeship, and the offerings of private trade schools.
>
> It is concerned with all education which has been adapted to meet the needs of industrial technology and to interpret industry. (p. 592)

The purpose of the book by Baird (1972) is to explain to the beginning teacher the procedures that are used to organize and present instructional content in a meaningful manner. This author provides the reader with a chart showing the relationship of each of the programs that can be placed under the rubric of "industrial education". For each program title in the chart there is an appropriate definition. According to this author "industrial education is a generic term used to encompass all types of education dealing with industry and technology in our society" (p. 6).

Giachino and Gallington (1977) in Course Construction in Industrial Arts, Vocational and Technical Education which is used by teacher educators to teach course construction to pre-service teachers state that industrial education is "a broad term that includes all educational activities dealing with modern industry. It is an inclusive term used when referring to industrial arts and vocational-technical education" (p. 39).

From a review of the definitions for "industrial education" that appeared in the professional literature, it is evident that all five authors and their co-authors would include industrial arts and vocational education as two of the major programs of study that they would place under the generic term of "industrial education". However, Silvius and his co-author Curry would expand the programs to be included under industrial education to those controlled by other agencies external to secondary school education - technical education, the apprenticeship system, and private trade schools.

The term "industrial education" first appeared, but was not defined in the 1954 annual report of the Department of Education. It was not until September 1969, when the first Inspector of High School Industrial Education was appointed to the Department of Education, that the term was used officially to designate a position but not a program of study. When the first draft of the "Rationale for

Industrial Education" was released to the various stake holder groups on February 1, 1970 the term "industrial education" that is indigenous to Alberta was defined. Since then that term has been redefined a number of times. The most recent revision of this term can be found in the 1979 Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators. The Handbook provides this definition:

> a program consisting of courses that provide a continuum of experiences, starting with exploratory experiences and activities in the elementary and junior high schools, expanding in the senior high school to the development of skills in career fields, and culminating in on-the-job experiences. (p. 2)

Because the focus of this study is on Alberta the definition for industrial education that appears in the Handbook was accepted for the research.

How this definition evolved to support the industrial education concept will be discussed in a subsequent chapter.

In Canada there are a number of terms that are used by provincial Ministeries of Education or Departments of Education to describe occupational education programs at the secondary school level. Among these terms are: vocational, technical, vocational-technical, and industrial education. From 1936 to 1962 in Alberta the term "Technical Elective" was used for the industrial arts program that was taught in a unit shop. During this same period of time technical education was offered at the Provincial Institute of Technology and Art.

Technical Education:

Some of the authors quoted in the previous section include in their definitions of industrial education the term "technical education" which in Alberta is a non-university post-secondary program and is under the purview of Alberta Advanced Education. As a consequence when personnel from Alberta Education formulated the definition of industrial education they did not include the term "technical education".

For the purpose of this study technical education will be considered:

> a terminal program normally not prepratory to a baccalaureate but earned to meet the needs of qualified scientific and engineering support occupations. This type of education is to prepare technologists and technicians who will support scientists, engineers, and managers in their work activities.

SOURCES OF DATA

The following sources of data were employed to collect topics, facts, and issues related to the problem of this investigation: Newsletters and Annual Reports of the Department of Education from 1905 to 1975; minutes, memoranda, and other records from Alberta Education that were part of the archival collection of this department; minutes from the Industrial Education Specialist Council (INDEC) of the Alberta Teachers' Association, and its predecessor, the Industrial Arts and Vocational Specialist Council (IAVEC); as well as newsletters and journals published by these councils; publications of the federal government, such as statistical reports on education published by Statistics Canada. Other sources that were reviewed included the Industrial Education Newsletter from 1969-1980 and its predecessor, the Industrial Arts Newsletter, from 1963-1969, both publications of the Curriculum Branch of Alberta Education; The Curriculum Bulletin; and the program of studies for both junior and senior high schools; other publications of Alberta Education; magazines and journals of the Canadian Vocational Association and the Canadian Education Association; and magazines such as the Canadian Vocational Journal and Education Canada. A documentary analysis was performed on some of the more relevant sources to identify pertinent data that could be analyzed and synthesized into this report.

To supplement the data secured from the above sources interviews were held with selected leaders in education in the province who were involved in the early development of vocational education and who were knowledgeable about how the concept of industrial education evolved.

INSTRUMENTATION

A review of the literature on instrument design was made to identify the most appropriate type of instrument to be used to collect data and information for this study. Other purposes of this literature review were to learn how a research instrument should be organized; to learn how to phrase a statement that expressed the intent of the question the researcher was asking; and to learn the correct method of writing statements for an interview schedule.

From the review of the literature on instrument design, it was decided that an interview schedule would be used to collect data and information for this study. An interview schedule was selected for the following reasons: first hand

responses could be obtained from the interviewee; the interviewees could be kept "on track" by being asked the same questions repeatedly; data collected with this type of instrument were objective and easily analysed; and an in-person interview would result in a higher rate of response. A copy of the interview schedule and a list of those who were interviewed can be found in appendix I on page 183.

The research instrument was prepared in consultation with the major adviser of this study. The purpose of this consultation was to provide the researcher with direction and guidance in the process used to write an objective interview schedule. Following this review of the instrument by the thesis supervisor, the necessary additions or modifications that were recommended by this reviewer were made to the schedule before it was used in an interview situation.

PILOT STUDY

Prior to being used with the pilot study population, the interview schedule was placed in the hands of a specialist in instrument design from the Department of Educational Psychology of the Faculty of Education. The purpose of this review was to determine if the questions on the interview schedule were properly worded and sequenced.

The interview schedule that was designed for this study was pre-tested with a limited number of graduate students in the Faculty of Graduate Studies and Research of the University of Alberta and enrolled in the Department of Industrial and Vocational Education. Also included in this pilot study were a limited number of in-service industrial arts and vocational education teachers who taught in the Edmonton Public School System. These people, who were involved in this phase of the study, were not involved in the major investigation.

The purpose of the pilot study was to determine if questions on the interview schedule were properly phrased and sequenced to yield data for this study. Another purpose for conducting the pilot study was to determine the validity of statements that would appear on the interview schedule in its final form.

METHODOLOGY

The following methodology was used to collect data and information for this study.

The major method used to collect data for analysis and synthesis was bibliographical. To conduct this phase of the research the researcher visited the libraries of the University, the Department of Education, and the Alberta Teachers' Association where contemporary newsletters, journals, and other publications were reviewed. Pertinent reference materials in the archival collections of these repositories were also retrieved, reviewed, and analyzed.

From this review it was found that one of the most significant sources of data was the Industrial Education newsletters published by the Curriculum Branch of the Department of Education.

The researcher with the assistance of the major adviser identified faculty members of the Department of Industrial and Vocational Education and members of the teaching profession who had the foresight to retain documents associated with the change in terminology from vocational education and industrial arts to industrial education. These individuals were invited to participate in the research by allowing the researcher the privilege of using the materials in their private files, for review.

Selected provincial leaders in education were identified who were involved in the implementation of vocational education during the early 1960's. These leaders were responsible for establishing the teacher education program at the University of Alberta. Others were responsible for establishing vocational education programs in the composite high schools of the province. Included among the latter group were leaders from Alberta Education who were responsible for curriculum development for vocational education and industrial arts and who were responsible for selecting teachers from these two complementary subject areas to serve on curriculum committees. Also interviewed were former supervisors of vocational education and industrial arts for the Edmonton Public School Board.

Educational leaders selected for interviews were: Dr. T. Byrne who served as Deputy Minister of the Department of Education at the time that the TVTA Agreement was signed between Ottawa and Alberta; and Dr. H.T. Coutts, former Dean of the Faculty of Education at the University of Alberta, who played a

significant role in establishing the Division of Vocational Education which was subsequently granted departmental status, becoming the Department of Industrial and Vocational Education at the University of Alberta. This faculty and department were the first in Canada to have a vocational teacher education program under Program 7 of the TVTA Agreement. Other leaders selected were Mr. R.H. Cunningham, who served as a high school inspector for the Department of Education and who was responsible for establishing curriculum committees for vocational education in the province; Dr. J.D. Harder, who introduced the industrial education concept to the industrial arts and vocational education teachers of the province, and to teacher educators; Dr. H.R. Ziel, who was appointed the first chairman of the Department of Industrial and Vocational Education at the University, and who was responsible for establishing the multiple activity organizational pattern for industrial arts; Mr. J.L. Moffatt, former Supervisor of Industrial Arts and Vocational Education for the Edmonton Public School Board, selected because of his long time association and experience with vocational education and industrial arts; and Mr. G. Sanders, selected because of his association with the Edmonton Public School Board as former Supervisor of Vocational Education.

To structure these interviews, an interview schedule was developed. This schedule consisted of eight questions which dealt with the evolution of the industrial education concept. Each question was considered to be open ended because it permitted the person being interviewed the privilege of providing an expanded answer to any question. During the interview, the researcher requested permission to record the interview on magnetic tape so that none of the significant details of the interview would be missed. Each person being interviewed was informed that the information on the tapes would be destroyed after the tape was analyzed and the needs of this study were complete.

When doubt occurred as to the clarity or validity of information on these tapes a telephone call was made to the individual concerned for verification.

The procedures used to design the interview schedule were described earlier in a section titled "Instrumentation."

Before the interview schedule was used with those selected to be involved in the interview phase of the study, it was pilot tested with graduate students enrolled in the Department of Industrial and Vocational Education. The procedures used to conduct the study and the reasons for conducting this phase of the study can be found under the heading of "Pilot Study."

ANALYTICAL FRAMEWORK

The primary purpose of this thesis was to describe the evolution and development of the industrial education concept and to show how this concept helped to synthesize vocational education and industrial arts under this generic term. Some events that occurred prior to the acceptance and implementation of this term and which had a major impact on this study and were therefore included in the text of this thesis. Examples of such events were:

1. Federal legislation that was enacted and which provided funds to the provinces on a cost shared basis, providing participating provinces signed an agreement with Ottawa. Funds from these enactments were used to support three types of programs: agriculture, vocational education and technical education.
2. The implementation of vocational education in the composite high schools of the province following the criteria listed in the schedule that accompanied the TVTA Agreement that was signed between Ottawa and Alberta in 1961.
3. Industrial Arts or some form of "Shopwork" has been part of the curricula of the secondary schools of Alberta from 1905 and until 1970 when it was placed under the umbrella term of "Industrial Education."

Industrial Education as a concept is relatively new to the various stake holder groups in the province. This concept was responsible for synthesizing the complementary programs of secondary school vocational education and industrial arts under the generic term of "industrial education."

To support this analytical framework this report will be organized in this fashion: Chapter II, An Overview of the Development of Vocational Education in Alberta; Chapter III, An Overview of the Evolution of Industrial Arts in Alberta; Chapter IV, Industrial Education - Synthesizing Vocational Education and Industrial Ats; and Chapter V, Summary, Conclusions, Observations of the Research with Recommendations for Further Study.

CHAPTER II

AN OVERVIEW OF THE DEVELOPMENT OF VOCATIONAL EDUCATION IN ALBERTA

Introduction

The previous chapter described the research design that was used to bring this study to its conclusion. That chapter included operational definitions for the terms that were used throughout this report, a description of the techniques that were used to collect data for analysis, and information that would be used in the preparation of the text for subsequent chapters of the thesis.

This chapter is organized into the following sections: Related Research; Early Vocational Education in Canada; The Genesis of Agriculture Education; Private Financial Assistance to Vocational Education; Federal Involvement in Vocational and Technical Education; Provincial Expenditures under the TVTA; Designing Vocational Education Curricula; and Summary. These actions are necessary:

To show the relationship of the findings of previous research to the current study and to present an overview of the origins of vocational education in Canada. Emphasis will be placed on the role that the McDonald Training Plan had on manual training in Alberta and the establishment of the Royal Commission on Industrial Training and Technical Education of 1910.

To present an overview of the more significant federal acts that were legislated and that provided financial support for the development of vocational education at the secondary school level in Canada, beginning with the Agriculture Instruction Act of 1913. This overview was included to provide the reader with background information on the major federal vocational acts and the agreements that were signed between Ottawa and Alberta, including the Technical and Vocational Training Assistance Act of 1960 and its Agreement of 1961, and to show the effect that this latter Agreement had on the development of secondary school vocational education in Alberta.

To describe the efforts that personnel from the Curriculum Branch of the Department of Education made to design curricula to implement vocational education in the composite high schools of the province following the signing of the Technical and Vocational Training Assistance Agreement of 1961.

RELATED RESEARCH

A review of the indices that are used to report the findings of educational research shows that no research has been completed on the evolution of the industrial education concept in Alberta. However, that review helped to identify a number of historical studies of the two complementary programs of vocational education and industrial arts that were completed by Albertans as they fulfilled the requirements for either a master's degree or a doctoral degree. Among these were the following master's theses: Simon (1962) the History of the Alberta Provincial Institute of Technology and Art; Harder (1964) The Development of the Industrial Arts Program and Its Present Status in the Province of Alberta; Smith (1973) The Development of the Industrial Arts Multiple-Activity in Alberta; and Clarke (1982) A History of Vocational Education in the Calgary Public School System 1900 -1982. Two doctoral dissertations were identified that were related to this research: Bryce (1970) The Technical and Vocational Training Assistance Act of 1961 - 1967: An Historical Survey and Documentary Analysis and Grywalski (1972) A History of Technical Vocational Education in the Secondary Schools of Alberta, 1900 - 1969.

Of the six historical or descriptive studies, two were completed at American Universities. Harder, as part of his graduate work, completed a master's thesis at Oregon State University while Grywalski completed a doctoral dissertation in the Department of Educational Administration at the University of Oregon.

Two of these six researchers, Harder and Smith, have served with the Department of Education in a capacity of supervisor or consultant. Harder began his tenure with that Department in 1964 when he was appointed Supervisor of Industrial Arts, a position which he held until September 1969 when he was appointed Inspector of High School Industrial Education. Four years later in September 1973, Harder was appointed Associate Director of Curriculum to represent and to provide service for the areas of Industrial, Business, and Home Economics Education and to be responsible for the overall policy, philosophy and interpretation of the programs of study. Smith, in September 1971, was appointed by the Department of Education, as an Industrial Education Consultant, responsible for the region south of Red Deer. (Industrial Education Newsletter, 1971, pp. 1-2).

Masters Theses

The first successful attempt at publicly supported post-secondary technical education in Canada occurred in Alberta when the Provincial Government established the Provincial Institute of Technology of Art in 1916 in Calgary. The history of the establishment of this Institute was not reported until 1962 when the results of Simon's research were published.

Simon (1962) completed a descriptive study which examined the influences that led to the establishment of the Provincial Institute of Technology and Art in 1916. Among these influences were the placing of both the Provincial Capital in 1905 and the University of Alberta in 1908 in Edmonton. (p. iii) According to Simon the most important influence was the establishment of a Royal Commission to investigate the operation of Calgary College. The Commission recommended that as a substitute for the bankrupt Calgary College an Institute of Technology and Art, which was not to offer university courses, be established at Calgary. (p. 10)

Simon traces the development of public support of vocational education in this nation through three stages: manual training in the upper grades of the public school below the high school level; more advanced vocational education in the pre-vocational schools, agricultural schools, technical and high schools; and advanced technical training at institutes of technology. (p. 8)

This thesis was important to the current study because Simon shows how funds that the province received under the various agreements with Ottawa were used in the growth and development of the Institute from 1916 to the 1959-60 school year. In a summary statement to his study Simon wrote, "The advent of Federal vocational high schools is an encouraging development towards an articulated, vocationally oriented program of technical education" (pp. 344-345).

The term "manual training" that Simon wrote about evolved into the term "Industrial Arts." Manual training was taught in a unit shop and the learning activities of its successor were also taught in a unit shop until the early 1960's. At that time it was advocated by provincial educational leaders that because of its heavy vocational orientation industrial arts was psuedo-vocational education and it was not meeting the objectives of general education. To investigate how successfully the industrial arts program had fulfilled the needs of the students Harder conducted a study.

The major emphasis of Harder's (1964) research was threefold: (1) to determine the effect that the industrial arts program had on the expansion of facilities, enrollment and staff in a ten year period from 1952 to 1962; (2) to compare the program at the start and finish of that decade; and (3) to determine how successful the industrial arts program had been in fulfilling the needs of the students who had taken it.

This study was conducted during the time that the Federal Government appropriated hundreds of millions of dollars in support of vocational education, but offered no financial support for industrial arts. The study was completed when Harder was High School Inspector for Industrial Arts, when the pattern for organizing the learning environment, for that subject area, was changed from a unit shop to a multiple activity laboratory.

Harder's findings in this study show that the industrial arts program expanded rapidly in the ten year period between 1952 and 1962 and that there was an equal growth in both priorities and staff. Harder also found that the industrial arts program was meeting the needs of the students after in both their post high school career and post secondary education choices. Because of the significant information contained generally in this report and because of information that Harder was especially privileged to have when writing portions of that thesis, it was used as a data base in organizing chapter three of this study.

While Harder was conducting his study, the Department of Education accepted the philosophy and methodology of the Alberta Plan. This plan advocated that industrial arts should be taught in a multiple activity laboratory where the materials and technologies of a productive society could be taught.

Smith (1973) conducted an investigation to analyse the development of the industrial arts multiple activity program in Alberta. He attempted to describe the underlying reasons for the shift in philosophy in industrial arts in the province.

While Harder's study documented the years from 1952 - 1962, Smith's study covered the decade from 1962 - 1972. This latter decade saw radical change take place in industrial arts: a drastic shift in both philosophy and methodology. The program evolved from a unit shop learning environment to a mutiple activity laboratory setting where students learned about a number of processes, materials and technologies found in a productive society. Smith reported that this plan

was first introduced by the University of Alberta under the direction of Dr. H. R. Ziel. During the decade of 1962 - 1972, new facilities were designed, built and equipped; as well, new curricula and curriculum guides were prepared by the Curriculum Branch to accommodate this new plan. Not every school board in the province was in favor of reorganizing industrial arts facilities from unit shops to multiple activity laboratories because of the high capital expenditures required to make the conversion. When the 1970 - 1971 school year began, 86.9% of the industrial arts facilities in the province were classified as multiple activity laboratories.

Smith concluded that industrial arts should remain an integral part of education in Alberta because it could have some vocational value and because industrial arts has a close relationship to general education. Other conclusions reached by Smith were: that the multiple activity laboratory of the Alberta Plan had been widely accepted by administrators, teachers, students and their parents; and that the teacher education program at the university for the preparation of pre-service industrial arts teachers was more realistic for these individuals because they acquire their competencies in laboratories that are organized as multiple activity laboratories.

The last five years of the ten year period covered by this research span another transistional period for the two complementary programs of industrial arts and vocational education. It was during this time that both of these programs became the foundation for the industrial education concept in the province. Information contained in this research has relevance for the third chapter on the background of industrial arts.

Clarke (1982) reported his research findings which described from an historical perspective (1900 -1982) the development and expansion of technical and vocational education in the secondary public schools of the Calgary Board of Education. The antecedent of vocational education in the Calgary School system was the pre-vocational program that was established at the Victoria School, at the beginning of the 1913-14 school year. This program was designed for pupils 13 years of age or over who did not intend to proceed into high school. (p. 212)

The emergence of vocational education as a major component of the total educational offerings, in the Calgary School system, had been a slow evolutionary process. Vocational education has had a major influence on a number of high school graduates from the Calgary Public System. (p. 10)

Clarke points out that the most important influence for the establishment of vocational education as a viable curriculum offering in the Calgary Public School System was the conditional cost-shared funds that were made available under the terms of the Technical-Vocational Training Assistance Agreement. Clarke points out that the Calgary School Board by the time of the termination of the Act in 1970 was able to add or build wings to twelve of its composite high schools in addition to constructing two secondary vocational schools.

Throughout his study Clarke shows how federal and provincial funds as well as local funds were allocated so that these facilities for vocational education could be constructed. Clarke was of the opinion that technical-vocational education was not totally healthy, that operational costs of these programs became relatively expensive and that some progress was thwarted by the lack of understanding on the part of some administrators who were biased in favour of academic programs.

The results of this study were significant to the current research for these reasons: (1) Each of the federal enactments that provided federal monies to support agriculture education, secondary vocational education or post-secondary technical education is reported; (2) the amount of funds allocated to Alberta is also included; (3) There is a section of a chapter that is devoted to curricular developments for vocational education programs of study; (4) the procedure that the Curriculum Branch of the Department of Education used to design these curricula; (5) An explanation is given of the two experimental programs that were conducted in urban and rural schools throughout the province to collect information on the flexibility of the proposed industrial education concept, in addition, Clarke gives an overview of how the industrial education concept was implemented by personnel from the Curriculum Branch of the Department of Education.

Doctoral Dissertations

The decade of the sixties was the golden era for funding secondary school vocational education and post-secondary technical education in Canada. During that decade the Federal Government legislated the Technical and Vocational Training Assistance Act of 1960. This Act provided cost-shared funds to participating provinces. When this short term Act terminated in 1970, Bryce (1970) reported the findings of his research. The major objective of that study

"was to conduct a historical survey and documentary analysis of the Canadian Technical and Vocational Training Assistance Act of 1961 - 1967." (p 2) Bryce includes a general review of federal legislation for vocational training prior to the enactment of the TVTA Act and of the expenditures that the federal government incurred under this bill.

This Act came into existence for a number of reasons rather than as the result of any single major event. (p. iii) Bryce wrote "Final expenditures . . . when the last phase-out provision is met . . . will reach approximately 2.6 billion dollars" (p. iv). In Alberta the federal funds appropriated found relatively prompt usage in broadening a vocational education program (composite high schools, technical institutes) which had been in existence for a number of years. (p. 353)

The levels of expenditures incurred by the federal government were not anticipated when the Act was initiated. Bryce lists four factors that contributed to these "run-away expenditures."

(1) a failure on the part of the federal government to translate into concrete operational objectives, complete with cost estimates, the broad goal of general improvement in Canada's capacity to meet her needs in regard to training skilled workers;

(2) the open-ended nature of the legislation and the 75-25 cost-sharing format in effect for the first two years;

(3) a lack of federal appreciation of the school "housing problem" faced by the provinces; and

(4) the difficulty of attempting to impose post hoc limitations on the legislation once underway. (p. 355)

Projects approved by the federal government for Alberta under the Capital Expenditures Program between April 1, 1961 and March 31, 1963 totalled $49,924,849.00. Bryce estimated that of this amount the federal contribution was $36,944,715.00. (p. 234) As a result of these expenditures under the Act the number of new student places added to educational facilities in Alberta was 35,142. (p. 272)

In October 1966 under the terms of the Act, the federal government had allotted to the provinces $1,146,047,200.00 for capital grants. Payments to Alberta by March 31, 1969 were $75,531,363.00 or 95.4% of the $79,203,200.00 that was allotted to the province. (p. 209)

The results of this study had relevance to the current investigation because they provided the researcher with background information on the politics involved in the genesis of the Act as well as in its termination. The moneys that Alberta received under this bill helped to provide Bryce with a perspective as to the magnitude of these funds. Bryce's overview of initiatives to support agriculture, technical and federal vocational education provided the foundation for a section of chapter three of this report.

Annual Reports of the Council of Public Instruction of the North-West Territories and of the Department of Education show that vocational education in Alberta has a history that predates the educational system of the province. The first researcher to complete a history of vocational education in Alberta was Grywalski (1973) who traced the development of technical-vocational education in Alberta's secondary schools from 1900 to 1969. The purpose of that study was to describe the evolution of technical-vocational education during that time frame, to reveal the stumbling blocks that impeded the progress, and to identify those events that hastened the growth of this program.

The method of study for this dissertation was mainly bibliographical with supplementary interviews. Unlike Bryce's (1970) study this investigation was limited to the secondary schools of Alberta and did not place particular emphasis on the TVTA Act or on previous legislation.

From an analysis of the development of technical-vocational education in the schools of Alberta for approximately six decades, Grywalski concludes that the results have been disappointing. He attributes this disappointment to the fact that as an emerging province Alberta was struggling with problems of industrial development, immigration, economic prosperity and depression. (p. 298) It was not until 1960 that technical and vocational education was given a new lease on life with the enactment of the TVTA Act and federal moneys were made available to support these two programs.

Grywalski states: "in spite of the moneys spent, and the prolonged labours of many educators, vocational education did not achieve the successes anticipated" (p. 299). Some of the factors that were responsible for the limited success of vocational education were:

(a) Vocational education, like technical education, has received little support from students, educators, or the public at large. Within the schools and within the universities, academic curricula are recognized as the path to success. Those who pursue vocational or technical education are regarded by society with considerable disdain.

(b) Educators themselves have been divided regarding the merits of technical-vocational education, and since in many of the secondary schools leadership has been provided by principals whose educational backgrounds are academic, inadequate recognition has been afforded to non-academic programmes.

. . . . . .

(d) Both vocational and technical education have suffered from a lack of adequate publicity; not only has the Department of Education been negligent in this regard, but most school boards and superintendents of schools have done little or nothing in informing the public about the merits of technical-vocational education. Consequently, technical-vocational education has been criticized harshly by many with an incomplete understanding of the facts.

. . . . . .

(g) Technical-vocational education has been plagued by the problems of high operational costs; consequently, increased budget costs have reflected a reduction in technical-vocational facilities or in equipment. In small schools, such increased costs have resulted either in a reduction of courses offered, the closure of the existing facilities, or in an apportionment of funds for other programmes. (pp. 301-302)

Despite the apparent negativism projected by the above, the province of Alberta, through personnel of the Department of Education, and other concerned educators have provided leadership and led the country in many aspects of technical-vocational education. Among the many accomplishments attributed to these leaders were:

(a) development of truly technical-vocational programmes at the high school level;

(b) establishment of degree programmes in vocational education at the University of Alberta;

(c) arrangements of articulation of technical-vocational programmes with the technical institutes and apprenticeship training. (p. 303)

The results of Grywalski's study provided background information on the evolution and development of technical-vocational education in Alberta that

other researchers on this subject failed to report. This information and information provided by Bryce was supplemented with information from other sources in organizing the content of segments of the current study.

EARLY VOCATIONAL EDUCATION IN CANADA

Researchers in the previous section trace the history of vocational education and industrial arts in Alberta to the MacDonald Manual Training Plan of 1900. However, in Canada, the genesis of vocational education can be traced to 1642 when the Society of Jesus (Jesuits) implanted apprenticeship training from Europe in the colonies of North America. (Meyer, 1965, p. 171) The Jesuits shaped the educational scene in New France and by 1668 opened two schools: one at Quebec, and another at St. Joachim, to provide training in the practical arts of cabinetmaking, carpentry, masonry, roofing, shoemaking and tailoring. (p. 19)

After 1763, the educational scene was dominated by the British and the Church of England, and by other religious groups such as Methodists.

Education progressed slowly in Canada it was not until 1801 that an act was passed that provided free schools to the public. Several schools, both English and French speaking (the French rights were protected in Canada by the passing of the Quebec Act of 1774), were organized. (p. 83) This development was, according to Phillips, (1954) hindered by the varied ethnic backgrounds of students and the large distances that had to be traversed by pupils to attend school. (p. 99)

The schools of colonial Canada were characteristically British and were hardly distinguishable from their English counterparts. The early universities were also patterned after English models. These schools and universities made no contribution to the development of vocational education.

The first institution of higher learning to establish a program that could be classified as "vocational" was McGill University when, in 1885, it offered/introduced programs of study in the applied sciences. (p. 207) Ontario, by 1896, had passed legislation that permitted high schools to provide technical education, and by 1904 Toronto had established its first technical high school. (p. 208) The economic base in Canada, and in particular eastern Canada, began to shift from an agrarian base to an industrial base which brought about industrialization and the demand for a skilled workforce.

Alberta's Territorial Period

Practical education was not limited to any single region of Canada. Each province or territory had some form of technical, vocational or agricultural education. Grants to education by the federal government were shared with all regions of the country, as will be described in the next section of this chapter.

During the last quarter of the nineteenth century Alberta was part of North-West Territories and its educational system was first controlled by a Board of Education, then the Council of Public Instruction which was subsequently replaced by the Department of Education in 1901.

An outstanding feature of the educational system in Alberta during the Territorial Period was the pattern of centralized control of curriculum which was transplanted from Ontario to the North-West Territories where it became firmly entrenched. In describing the high school program in Alberta during this period Walker (1979) wrote:

> The Legislative Assembly of the North-West Territories favored centralized control of the secondary school curriculum. When it provided in 1888 a special government grant of $350.00 per year for union high schools, the assembly stipulated that the Territorial Board of Education should prescribe the program of studies. In 1892 the assembly made the newly created Council of Public Instruction responsible for the preparation of a uniform curriculum for all school standards from one upwards. (p. 211)

All the territorial high school programs adhered to the principle of centralized control of the curriculum. The territorial government agencies prescribed the program of studies to be used in all public secondary schools. (Walker. p. 213) The curriculum in the territorial high schools included a fixed range of subjects in English, Mathematics, Science, and History. Foreign languages were offered but not stressed. There was a narrow range of vocational education subjects that were available which included agriculture and bookkeeping.

According to Walker, Dr. Goggin, Superintendent of Schools for the North-West Territories in 1902, was responsible for introducing a new high school program that introduced the elective principle. This program included certain subjects that were obligatory and others that were optional or elective. (p. 219)

There were a number of limiting factors why electives could not be implemented in the territorial high schools: practically all the subjects, optional

as well as obligatory, were of an academic nature; external examinations exerted a dominant influence on the instructional program that was organized by the principal of each high school; and the high schools of the territories were too small to permit extensive application of this concept.

THE GENESIS OF AGRICULTURE EDUCATION

Prior to 1885, much of the education of the students in Alberta was provided by missionaries, or the various religious sects, who in addition to teaching the basics of education also attempted to teach various manual skills that were related to agriculture and to maintaining a homestead on the prairie.

In the quarter century between the 1890's and the 1920's Canada grew in population, in the number of provinces, in the industrialization and urbanization of its economic base and in the opening of the West. A number of these settlers brought with them to Alberta the desire for government and education such as they were familiar with in the East. To initiate this change these settlers formed their own political party, the United Farmers of Alberta.

From the time that Alberta became part of Confederation until 1908 the school population was distributed so that the number of pupils enrolled in rural schools was greater than the number of pupils enrolled in village and town schools. In 1908 an enrollment shift occurred in favour of the graded schools of the urban centres. By the 1914 - 1915 school year this enrollment shift again reversed itself in favour of the rural schools. In discussing this reversal Grywalski (1973) presents the following reasons that this phenomenon occurred:

> In 1914 this tendency was reversed when adverse financial conditions, caused by World War I and a retrenchment in provincial undertakings, created a movement of people from the urban to the rural setting. By the end of 1914 the rural school enrollment exceeded that of the urban by 3,190 and by the end of 1915 the differences were even more pronounced. (pp. 24-25)

The most significant attempt to include agriculture education in the schools of this nation occurred between 1900 - 1935 when national leaders were concerned about growing urbanization and the threat to national food production. These leaders saw a need to promote rural revitalization through a system of agricultural education that would encompass the schools.

Another element that tended to itensify the drive for agricultural education in the schools was the state of the science of agriculture and the fact that the most virile educational institution was the common school. In discussing the factors that strengthened the feeling that the school was becoming more important to the populace of the province Jones (1979) explained:

> Numbers and percentages of students in the elementary and secondary schools expanded enormously as did length and regularity of attendance. Many school men began to stress the unity of school and life. . . Intensifying the themes of unity and expansion was the close relationship among the curricular innovations of the period - health education, physical education, domestic science, manual training, and agriculture. (pp. 87-88)

The educational philosophies of the principal advocates of agricultural education in this nation were similar to the philosophy of John Dewey:

> like Dewey, these men believed in the social significance of the school, the importance of the link between the school and the home, and the interests of the child as a basis of learning. They thought that the school was concerned with more than intellectual growth. They opposed stultifying repression and drill and advocated experimentation, direct experience, practical subjects, correlation of subjects and education according to environment. (p. 90)

The purposes of Canadian high school agriculture education were to create a set of health giving principles, a positive viewpoint concerning country life, the recognition of virtues eminent in the work of the soil, and the acknowledgement and application of man's power over nature. (p. 89) There were some reformers who took the position that schools could revitalize rural areas through courses in nature study, school gardening and agriculture; others advocated manual training and household science as a means of acquainting students with industrial and domestic work of the nation. (Sheehan, 1980, p. 109)

Agriculture as a course was first offered in the schools of the province during the 1910 - 1911 school year when it was offered in both village and rural schools. It is evident from what high school inspectors wrote in their annual reports that the program was limited: to textbook learning, with no practical demonstrations; and to a school garden which was maintained by the teacher and the students. (Annual Report, 1911, p. 63) When the teacher left the school, the school garden fell into neglect because there was a lack of consistency of preparation of teachers to teach this course.

To alleviate the problem of poorly trained teachers of agriculture, in 1913 the Department of Education made available the first summer session for teachers and offered as supplementary courses both agriculture and gardening and nature study. (Annual Report, 1913, p. 54)

The failure of this educational innovation was attributed to both natural and man influenced causes. As well by the late twenties most farmers' political organizations were in a downward decline. Another factor which contributed to the demise of secondary school agriculture was the fact that provincial and federal departments of agriculture and the colleges and schools of agriculture moved the science of agriculture beyond the understanding of the average teacher who taught agriculture. These teachers were often transient and ill-prepared to teach gardening (agriculture) to their students. The agriculture program that was presented in the public schools between 1905 and 1915, as Jones (1979) indicated, proved to be a dismal failure.

> The brand of agriculture offered by schools, moreover, was poor pap, too whispy and insubstantial, too ethereal and too general, too character oriented and too impractical to be significant to lean and desperate farmers. (p. 91)

United Farmers of Alberta

The curriculum that was available to students from 1905 to the mid twenties was specifically designed for those who would continue their education at university. That curriculum was heavily academic and it was rigid, following closely a program imported from Ontario. The first major revision of the curriculum was undertaken by the Department of Education in 1912. As a result, a system of twelve grades was introduced and provision was made for the teaching of such special subjects as art, manual training, household economics and health. At the close of the First Great War, between 1921 and 1924, curriculum from Grade 1 to Grade 12 was rewritten so that subject matter in the basic courses was reorganized, a wider choice of subjects was made available to students who did not aspire to enter university for professional training, and the provision for promotion by subject or unit was introduced.

The latter curriculum change took place when The United Farmers of Alberta (U.F.A.) came to power in the province in 1921. The U. F. A. maintained political office in the province for a period of 14 years from 1921 -1935, and also witnessed helplessly the greatest agrarian desertion in pre-depression Canadian history. (Jones p. 90)

There was a shift in emphasis in the whole approach to education under the administration of the U.F.A. when this political party was in control of the Provincial Government. The United Farm Women of Alberta (U.F.W.A.), the women's organization of the U.F.A., saw its primary function to be educational rather than political. This farm women's organization advocated progressive education as well as a number of changes in the system of rural education. Under the strong aggressive leadership the Education Committee of the U.F.W.A. considerable effort was exerted to bring about educational reform in rural education during the years 1920 to 1930. The Dalton Plan received considerable attention at the 1925 convention of the Association when it was introduced by Mrs. Irene Parlby, Minister Without Portfolio, in the provincial government. (Wilson, 1979, p. 127)

The women of the U.F.W.A. were cognizant of the deficiencies of and the need for improving contemporary rural schools. In the decade of the 1920's the leadership of the Association were not only intent on improving the general and social conditions of the farm family but wanted to bring about definite and positive change in rural education in the west.

The U.F.W.A. in 1921 had representatives on both the Elementary School and the High School Revision Committees of the Department of Education. Other lay groups concerned with education also had representatives on these committees. In revising curricula the Department of Education in 1921 mailed a questionnaire to various organizations and individuals. In part the results of these questionnaires show:

. . . . . .

> 2. That the program of studies for Grades IX and X be fairly rigid, with an increasing number of options in each year.
>
> . . . . . .
>
> 5. There was comparative unanimity in the suggestions that the following courses be obligatory on all (a) English to be carried on during the whole secondary high school course. (b) Physical Education (to include Physiology and Hygiene) to be given in every year of secondary school course. (c) History to be retained as obligatory or optional in all grades of the secondary school, but its content to be modified. (Annual Report, 1922, p. 25)

As a result of the information produced by the questionnaire the Department of Education formulated certain principles on which to base the work of revising curricula. One of these principles was greater flexibility that

would be adaptable to the varying needs of pupils living under widely different conditions although the percentage of obligatory courses would remain high until Grade 10. The Superintendent of Schools for the Province, McNally, (1922) in the Annual Report for that year described three types of flexibility that were to be considered when curricula were revised.

This flexibility should be of three kinds.

(a) It should meet the needs of the boy who has a bent for agriculture, or mining or commerce, as well as, the one who wishes to enter a profession.

(b) It should result in greater freedom of choice for the local authorities taking into consideration the qualifications of the teaching staff and the ability of the Board to provide variety in courses.

(c) It should provide an alternative program of study for every boy and girl with the capacity for advanced work for at least three years and to delay the choice of a vocation until the age of sixteen years has been reached.

(d) The percentage of obligatory subjects should be fairly high in Grades IX and X, but should show a marked decrease in Grades XI and XII. (p. 25)

The courses that were in the process of being organized by the High School Revision Committee included General, Normal Entrance, Agricultural, Commercial, Technical, and University Matriculation. With the exception of the General course 75% of the content was fixed. The standard of twenty-one units required for completion of secondary school was established. A unit was defined as "the amount of material the average pupil can acquire efficiently in from 175 to 200 minutes per week during the school year" (p. 26).

A comparison of the new curriculum with what was in place at the turn of the century should reveal that the curriculum base for secondary education had changed drastically because the number of subjects studied each year was materially reduced.

The next step in program building took place during the Depression with the establishment of a more flexible curriculum that recognized the educational value of the "practical subjects". This program had been organized because the number of students who entered high school, had more than doubled. A number of these students did not have either the capacity or the interest for advanced study in the subjects of an academic programme. McNally (1939) goes on to state:

As a consequence Alberta had,

1. A school system consisting of three divisions, viz: Elementary (Grade I-VI); Intermediate (Grade VII-IX); High School (Grade X-XII).

. . .

6. Emphasis on general courses in which the student may, while getting a sound training in fundamentals, follow his own inclinations and aptitudes far enough to discover the extent of his abilities in these centres of interest. (p. 8)

Agriculture Education Re-Introduced

The Agriculture Education Program was removed from the schools for a period of 27 years. It was reintroduced in 1940, when the Department of Education in cooperation with the Department of Agriculture sanctioned an eight credit course in vocational agriculture to be taught at Brooks. This course was classified as an optional course and was to be taught at the experimental farm and the Irrigation Company Farm, both in Brooks. (Annual Report, 1940, p. 11) The outline for this course was designed by Inspector R. V. McCullogh and it was organized so that each student carried on in-school activities as well as at-home activities, both under the supervision of the teacher. In describing this programme Deputy Minister McNally projected its future when he wrote, "Should this [the vocational agriculture programme] show the results expected, this and similar options will be made available for pupils in other high schools" (p. 11).

McNally also reported that the teacher selected to teach this experimental course was a graduate in agriculture, with farm experience both before and after his university work. The teacher also had the advantage of graduate work in a Western State where agriculture education at the high school level was well established.

Like its predecessor program the Experimental Program also encountered difficulties which were of concern to officials of the Departments of Agriculture and Education. Because of these concerns a report on the Experimental Programme was prepared by the Supervisor of Schools and School Inspectors McCullough and McGregor and presented to a special committee composed of the following:

G. F. McNally, Deputy Minister of Education;
O. S. Longman, Deputy Minister of Agriculture;
Dr. F. Newton, President, University of Alberta;
Dr. R. Sinclair, Dean of the Faculty of Agriculture, University of Alberta;

S. H. Gander, Department of Agriculture;
H. C. Newland, Supervisor of Schools, Department of Education.
(Annual Report, 1942, p. 26)

With reference to the Brooks experiment the Report pointed out that it was difficult to secure teachers who were properly qualified to teach this course. There were other matters that had to be resolved in providing agriculture courses.

> The provision of a sequence of courses throughout the intermediate and high school grades, the integration of vocational agriculture with other parts of the curriculum, the criteria for selecting suitable males; and the choosing of areas [geographical areas] in which agricultural courses could be offered with a fair degree of success. (Grywalski, 1973, p. 53)

However, the Committee did recommend to the Departments of Agriculture and Education that a program of vocational agriculture be implemented in the public schools for these reasons:

(a) Since the industry of Alberta was primarily agriculture, it was assumed that many males who entered rural high schools would become farmers. Therefore, if more effective training was provided, it was likely that they would remain in secondary school longer than one or two years.

(b) Since instruction in vocational agriculture was judged to be practical rather than theoretical, it would serve directly to enhance the "efficiency, quality and quantity of farm production".

(c) Instruction in vocational agriculture would assist in alleviating farm-labour shortages, and after the war, would promote the stabilization of agricultural industries. (Annual Report, 1942, p. 20)

Two years later in 1944, a sub-committee appointed by the Preliminary Board of Agriculture Education met and authorized the Supervisor of Schools to present to the senior officials of the Department of Education a proposed format of vocational agriculture courses that would be offered in urban or in rural high schools. The committee also emphasized that the projected program be offered only in schools where suitable equipment and qualified instructors were available. (Grywalski, 1973, p. 58)

The Supervisor of Schools in 1946 was able to translate the proposed programme into realistic objectives and instructional units. During that year

Farm and Home Mechanics 10, Plant Science I and Animal Science I were added as vocational agriculture courses. The former course was classified as a technical elective, while the latter two courses were designated as general electives, with the provision that these two courses would be offered in schools where practical work would be taught and supervised by teachers with special qualifications and training in agriculture. (Grywalski, p. 60)

Both of these electives were widely accepted by school administrators, school trustees, and officials from the Curriculum Branch of the Department of Education. During the 1947 - 1948 school year these courses were offered on an experimental basis at Cardston, Athabasca, Medicine Hat and Red Deer. (Annual Report, 1947, p. 18) Other rural centers in the province planned to introduce these courses following approval of the Department of Education. The number of rural secondary schools to offer instruction in Farm and Home Mechanics increased to 80 in 1947. (Annual Report, p. 80) By 1948 student registrations in the Farm and Home Mechanics programme was 1,245. (Annual Report, 1948, p. 72)

Initially introduced on an experimental basis, attempts by the Department of Education to promote either Plant Science I and II or Animal Science I and II among rural youth of the province did not meet with the success anticipated. Because of low enrollments for these courses not too many divisional school boards were prepared to offer these courses due to the costs of buildings, furniture, and equipment that were required. (Grywalski, 1973, p. 72)

The Department of Education during the 1952 - 1953 school year, in order to stimulate student interest in agriculture, introduced Agriculture 10 as a technical elective, as well as Agriculture 20, 30 and 31 as general electives. Because these courses were limited in scope and did not include practical content that would meet with the needs of the farm community they did not receive student support.

A number of changes occurred during the 1950's that influenced the direction that education would take. Among these changes was the concept of centralization of schools as a means of providing greater educational opportunities for rural youth and of solving a teacher shortage. (Grywalski, p. 66) The centralized rural high school brought an end to the small rural high school. During this decade the concept of the composite high school began to gain greater acceptance and to develop throughout the major population centres of the province.

In 1953 the Co-Terminous Boundary Commission was established by the provincial government "to bring about the reorganization of local boundaries so that those of school boards and municipal district would coincide" (Grywalski, p. 67).

A year later, in 1954, The Royal Commission on Education was formed. This Commission, within a year after it was formed, heard briefs, reviewed written submissions, and submitted its final report. The Royal Commission on Education in its findings had some doubts that the potential existed for any school board in the province to offer a bonafide vocational agriculture education programme and recommended the discontinuance of courses in agriculture beyond Grade X. (Report of The Royal Commission on Education, 1959, p. 149)

Technical electives of the senior high school were recognized by the Apprenticeship Board, providing these courses were taught by a teacher who held journeyman qualifications in the subject area and the student successfully passed an examination set by the Board. Students who met these criteria would receive advanced standing toward their apprenticeship.

Three years after the industrial education concept was introduced in the province Farm and Home Mechanics 10 was retitled Related Mechanics and was divided into the following five non-sequential modules: Power Systems, Carpentry, Wiring, Machine Shop, Welding and Related Mechanics. With the exception of Related Mechanics these modules could be taken in any order. (Related Mechanics Curriculum Guide, 1972, p. 4) This program was specifically designed to meet the needs of students planning careers in the agriculture sector of the Alberta economy.

During the 1976-77 school year the total junior high school enrollment was 111,517 students. Of that number 3,556 students were enrolled in agriculture. (Alberta Education and Diploma Requirements, 1977, p.38). The high school population during that school year was 95,638; of that number only 179 students were enrolled in the Related Mechanics "22" "32" series of courses for 5 - 10 credits. The enrollment for the Agriculture "10" "20" "30" series of courses was considerably higher with a total enrollment of 593 students. Data in Table I show a break down of the enrollment aggregate for both of these courses in agriculture.

Table 1

High School Enrollment 1966-77

Related Mechanics and Agriculture Courses

DEPARTMENT		CREDIT	1976-77 ENROLMENT	TOTAL
Related Mechanics	22A	5	51	
	22B	5	38	
	22C	5	37	
	32A	5	18	
	32B	5	17	
	32C	5,10	18	179
Agriculture	10	4,5	547	
	20	8,9,10	40	
	30	5,10,15	6	593

Adopted from: Alberta Education and Diploma Requirements, 1977, p.38 & p.55.

The 1982 matrix of Industrial Education found in the Industrial Education Manual For Guidance To Teachers, Counsellors and Administrators shows that Related Mechanics is part of the Mechanics Career Field. The industrial education concept and its evolution will be described in detail in Chapter IV of this thesis.

Unlike other vocational education courses the history of vocational agriculture cannot be traced to the MacDonald Manual Training Plan. The Vocational Agriculture Program of Study was established because of a perceived need to provide farm youth with sound training in the fundamentals of agriculture.

PRIVATE FINANCIAL ASSISTANCE TO VOCATIONAL EDUCATION

It has been documented by Simon, (1962), Bryce, (1967) Glendening, (1968) Stamp, (1970) and Grywalski, (1972) that the first step toward the development of vocational education at the secondary school level in this country was the substantial donation, in 1900, that Sir William MacDonald made in support of manual training. This wealthy tobacconist donated 1.5 millions of dollars to establish the MacDonald Manual Training Plan. Manual training was introduced into the educational structure because "the existing system of formal

education in the public schools was uninspiring and inadequate for the bulk of students, whose lifetime work was to be in the manual occupations." (Simon, 1964, p. 4)

The structure of the Plan, as provided by Robertson, was to establish manual training in elementary schools in twenty-one centres from Prince Edward Island to British Columbia. (Stamp, 1970, pp. 101-102)

The purpose of these centres was to prepare teachers with the necessary skills that were required by them to teach manual training at both the elementary and the secondary school level. Because Canada lacked trained personnel to teach in these centres, a total of 45 instructors had to be imported from Europe, Great Britain and the United States. During the summers of 1900, 1901 and 1902, summer schools were conducted for the purpose of training Canadian teachers. (Smith, 1973, p. 45)

The twenty-one centres involved were guaranteed maintenance for three years at no cost to participating school boards or to the pupils. (Stamp, 1970, p. 102) According to the regulations of the Plan all equipment reverted to the sponsoring school board at the end of the three year period.

Chalmers (1967) wrote that the Plan provided for salaries, equipment, upgrading and costs of installation, and costs of training teachers. Buildings were the responsibility of contracting school boards. (p. 204)

A manual training centre in Alberta was established in Calgary and adjacent Nose Creek.

When the three year period ended, Calgary adopted the MacDonald Training Plan as a permanent part of its curriculum and labelled it manual training. According to Smith (1973) the popularity of the Plan rapidly spread to other Alberta School Districts. (p. 46) Some of the smaller population centres such as Medicine Hat had implemented manual training in their schools by 1907. (Grywalski, 1972, p. 25) A year later, the Edmonton Public School Board placed manual training in grades six, seven and eight. (Harder, 1964, p. 12) For these grades the two main areas of study were woodworking and blacksmithing. In 1911 Lethbridge established a manual training centre in its school system. The influence that this Plan had on the evolution of industrial arts will be described in the fourth chapter.

FEDERAL INVOLVEMENT IN VOCATIONAL AND TECHNICAL EDUCATION

Section 93 of the British North America Act of 1867 states that "in and for each Province, the Legislature may exclusively make laws in relation to Education". This section of the Act provides the provinces with provincial legislative authority as well as the responsibility for education which has been the keystone of provincial autonomy. Provincial jurisdiction over education has been jealously guarded by provincial authorities. In spite of this closely guarded provincial right, vocational and technical education have enjoyed a strong federal-provincial relationship since the first decade of the twentieth century. Writing on federal financial involvement in education, Bryce (1967) states: "shared cost programs have a long history in Canada" (p. 2). This history can be traced to the Agriculture Instruction Act of 1913 which provided federal moneys to the provinces for instruction in agriculture.

From a national perspective academic education dominated the provincial school systems. As a consequence these systems lagged behind in the development of vocational and technical education. Much of what was considered as vocational education at the secondary school level was quasi-vocational education because it involved only commercial studies in the form of shorthand, typing, accounting, practical instruction in agriculture, drawing, and home making all of which played a major role in the nineteenth century curriculum. Manual training did not appear in the schools of the nation until 1900.

As early as 1901 the Dominion Trades and Labour Council and the larger boards of trade had made representations to the federal government on behalf of vocational education because of the changing labour requirements of a developing industrialized economy. (Dupre et al, 1973, p. 13) These representations went as far as to urge the federal government to appoint a federal minister of industrial education. This was unacceptable to the federal government because this was "an uncertain matter for federal jurisdiction" (p. 13).

The Royal Commission on Industrial Training and Technical Education (1910)

The Royal Commission on Industrial Training and Technical Education was established by the federal government under the chairmanship of Dr. James Robertson who also directed the MacDonald Manual Training Program (1900 to 1903) and was partly responsible for its success.

The Robertson Commission took three years from the time that it was established to the time it submitted its final report. Glenndenning (1968), in discussing recommendations in the final report of the Commission, states that one of the recommendations that was made was that occupational training be made available to both youth in school and adults already in the labour force and that this occupational training be under provincial control and regulation. (p. 5)

It was recommended by the Commission that the sum of $350,000 per year be made available to the provinces from the federal government for vocational education. This money was to be divided among participating provinces on the basis of population at the last census. The grants were not to exceed 75% of provincial expenditures for the previous fiscal year for the promotion of drawing, manual training and nature study.

A thorough review of that Report shows that although the title included the words "industrial training' and "technical education", the Commission did not define either of these terms.

It could be inferred that these terms were used by writers of the time to describe that form of education which provided an individual with the pre-requisite psychomotor skills that would permit that individual to secure a job, retain that job, and make satisfactory progress with the job provided that additional training or education were taken.

The national agrarian economy at the time made training in agriculture more pressing than any other form of education. The Federal response was the Agriculture Aid Act of 1912 and the Agriculture Instruction Act of 1913. Both of these acts were legislated before the Royal Commission completed its mandate in 1913.

Between 1913 and 1960 there were a total of eight federal acts that were legislated to provide funds to support agricultural education, technical education or vocational education. Among these acts were the:

Agriculture Instruction Act - 1913
Technical Education Act - 1919
Vocational Education Act - 1931
Youth Training Act - 1938
National Forestry Program - 1939
War Emergency Training Program - 1940
Vocational Training Coordination Act - 1942
Technical and Vocational Training Assistance Act - 1960

The more significant of these acts were: The Agriculture Instruction Act - 1913; The Technical Education Act - 1919; The Vocational Training Coordination Act - 1942; and The Technical and Vocational Training Assistance Act - 1960.

It should be noted that most of the titles of the federal acts use the term "training" rather than "education". This was by design of those who wrote these acts because education is a provincial responsibility, but the federal government is permitted to take part in manpower training.

Agriculture Instruction Act - 1913

This Act is significant because it launched the first major conditional grant for any purpose and it established what would become a recurring pattern of federal funding coupled with provincial operating responsibility.

This Act provided the sum of $10,000,000 on a pro-rated basis to the provinces, for the purpose of promoting agricultural development. Alberta took advantage of the terms of this Act and used some of the federal moneys available to offset the cost of establishing agriculture colleges at Vermilion and Olds. The bulk of the funds that Alberta received under the terms of the Agriculture Instruction Act of 1913 was used to develop and expand the Provincial Institute of Technology and Art. (Chalmers, 1967, p. 209)

Although this Act was considered to be the first act to provide federal funding to support vocational education, its major disadvantage was that the provinces were not required to match federal grants. (Lowe, 1963, p. 69) According to Bryce (1970), "the major defect of the legislation apparently lay in the unconditional nature of the grants made to the provinces" (p. 71).

Technical Education Act - 1919

During World War I, training for the military was a cooperative venture between the provincial and federal governments with the federal government paying the entire cost of training, under the War Emergency Training Plan.

After the war, the federal reaction to meet the comprehensive recommendations of the Royal Commission on Industrial Training and Technical Education that were delayed by the war, was the enactment of the Technical Education Act of 1919.

The specific purpose of this Act was to stimulate vocational education and technical training in the secondary schools. This Act was significant because, unlike the Agriculture Education Act, each province was required to match the federal moneys on a fifty-fifty cost shared basis (rather than per capita), providing a formalized agreement was signed between the federal government and participating provinces. (Dupre, 1973, p. 14) Hence, the cost sharing principle between the federal and provincial governments to support vocational education was established, and would continue to be used for many years.

This statute also established the concept that both participating parties had to sign a formalized agreement before conditional cost-shared funds could exchange hands. In signing this agreement signators agreed to abide by the schedules that were prescribed for each program of a particular Act.

Originally the Act was to terminate by 1929, but was extended on no fewer than four occasions to 1948, twenty-nine years after its enactment. By 1937 Alberta had spent its full amount of $672,524. (Lowe, 1963, p. 69) The Technical Education Act provided monies for many things related to vocational education which included:

a) rental or purchase of land,

b) maintenance of physical plant,

c) administration cost,

d) salaries of teachers, and

e) training of teachers.

The Provincial Institute of Art and Technology (later to become the Southern Alberta Institute of Technology) was partially funded by this Act.

Legislation enacted in 1931, 1937, 1938, and 1939, with the exception of the 1931 Vocational Education Act was aimed at the training of unemployed youth for the world of work and the major role that vocational education might have to assist people during periods of uncertainty. This had an influence on subsequent federal/provincial agreements which were oriented toward providing productive skills for members of the Canadian work force in war industries as well as providing skilled workers for the armed forces.

Vocational Training Coordination Act 1942

During the height of the Second World War the Vocational Coordination Act of 1942 was legislated and helped to establish the legal foundation for federal-provincial relations in education for subsequent legislation.

> The Act combined the policy of federal aid to education at the secondary school level as engendered by the Technical Vocational Act of 1919 with provisions for training the unemployed as envisaged by legislation enacted during the depression. This pairing of federal support to educational institutions with federal training initiatives to combat unemployment, all via the intermediary of the provinces, was to be the hallmark of post war policy. (Dupre, 1973, p. 15)

Under this statute there was established a Vocational Training Advisory Council composed of representatives of labour, management, related interests, and provincial governments.

Under this Act, projects started under the Youth Training Act were continued. This Act further provided for the retraining of veterans at no cost to the provinces. The Vocational Training Coordination Act also provided funding for the following special training projects (Lowe, 1963).

Project	Federal Contribution
Training of service tradesmen	100%
Training of workers for defense industries	75%
Veteran rehabilitation training	100%
Unemployed workers training	50%
Youth training	50%
Training of foremen and supervisors	50%
Training of disabled persons	50% (p. 72)

To those who had responsibility for vocational education, the Act is considered to be significant because it was the first piece of federal legislation to provide a definition for vocational training.

> Any form of instruction, the purpose of which is to fit any person for gainful employment or to increase his skill or efficiency therein, and, without restricting the generality of the foregoing, includes instruction to fit any person for employment in agriculture, forestry, mining, fishing, construction, manufacturing, commerce or in any other primary or secondary industry in Canada. (The Vocational Training Co-ordination Act 1942, paragraph 2, sub-section C)

This Act was originally scheduled to run for ten years, but was extended for a second term of ten years which ended in 1954. The Act was amended and continued until 1960, when it was replaced with the Technical and Vocational Training Assistance Act. (Lowe, 1963, p. 74)

The bulk of the funds that the provinces claimed was for training allowances and operating costs. Intergovernmental agreements pursuant to this Act covered apprenticeship training, veterans' re-establishment training, and vocational schools assistance. These were consolidated under successor agreements.

From 1942 to the advent of the decade of the sixties two additional acts were legislated that provided conditional funds to support vocational education. These acts were the Vocational Schools Assistance Agreement (1945) and the Vocational and Technical Training Agreement No. 2 (1957)

Technical and Vocational Training Assistance Act - 1960 (TVTA)

During the mid 1950's the economic growth of Canada had slowed to the point where the country was in a recession. This phenomenon was accompanied by rising cyclical unemployment which was of concern to federal officials. When the unemployment rate reached a post war high of eight per cent during the summer of 1960, the federal government raised its grant to the provinces for training unemployed workers under the existing vocational training agreements from fifty to seventy-five per cent as a stop gap measure. (Dupre, 1973, p. 15)

According to Cunningham and Chalmers, (1963) in a Department of Education Curriculum Newsletter, there were three reasons why the federal government enacted the TVTA Act.

1. the need for many more skilled workers to enable Canada to retain and improve her position in the industrial world.
2. the lack of adequate training facilities to develop the required manpower.
3. the need to lessen the number of drop-outs from our schools by offering educational opportunities to qualify our youth for employment in this rapidly changing world of work. (p. 1)

On 20 December 1960 Royal Assent was given to the Technical and Vocational Training Assistance Act which became known as the TVTA. This comprehensive piece of legislation authorized the expenditure of federal funds

on a shared conditional basis with participating provinces for the support of vocational and technical education. This Act continued the pattern, established twenty years earlier, of combined federal aid at the institutional level with assistance in training the unemployed. (Dupre, 1963, p. 16)

The Act encompassed no fewer than ten distinct programs. Program I, Vocational High Training Program, was for courses given as an integral part of high school education, in which at least one-half of the school day was devoted to equipping students with the necessary skills, attitudes, and understandings to enter the world of work.

Other programs of the Act were not quite so significant to this study because they had limited application for secondary school vocational education or post-secondary technical education.

The TVTA through Program I sought to encourage youth to remain in school to acquire the necessary education for productive employment prior to entering the labour force and to provide qualifications which would provide young people with a wedge against future unemployment.

This program encompassed traditional federal aid in support of costs incurred by educational agencies to prepare secondary school students. These operating costs were calculated to be shared on a 50-50% basis in proportion to the population aged fifteen to nineteen. This percentage remained fixed during the six year life cycle of this legislation. By 1967 operating costs were $259 million and capital outlays under the provisions of this Act had reached $592 million. (Dupre, p. 17)

There were interprovincial grant disparities that developed under the Act as Dupre pointed out:

> By 1967 prosperous Alberta had claimed $58.6 million in capital grants, more than twice the combined total of its similarly populated but less affluent neighbours, Manitoba and Saskatchewan, and almost triple the amount claimed by the three Maritime provinces of New Brunswick, Nova Scotia, and Prince Edward Island. (p. 19)

Bryce (1970) in The Technical and Vocational Training Assistance Act of 1961 - 67: An Historical Survey and Documentary Analysis pointed out that the phase-out arrangements for the Capital Expenditures Program alone required federal contributions of over a billion dollars ($1,146,047,200.00). (p. 309) Of the

federal capital grants totalling $1,146,047,200.00, that were allocated to the provinces, by October, 1966, Alberta was allotted $79,203,200.00. By 31 March, 1969, Alberta had received $75,531,363.00, or 95.4% of its allotment. (p. 309)

One of the significant features of the TVTA was that for each of the ten programs of the Act there was a schedule with a number of regulations that participating provinces had to follow in order to be eligible to receive federal conditional cost-shared funds for a particular program. With this understanding, Alberta became a signatory to the Technical and Vocational Training Agreement on July 18, 1961 which was made retroactive to April 1, 1961. (Department of Education, 1962, p. 91)

Program I is of interest because it concerned the Vocational High School Training Program where at least one half of the students' time was devoted to technical, commercial and other vocational education courses that were designed to prepare the learner with entry level skills for the world of work.

According to section 2 of Bill C49 the intent of the TVTA was that "The Province in consultation with the federal government will develop, organize, and carry out training programs for the development of skilled manpower. (Bill C49, p. 2)

PROVINCIAL EXPENDITURES UNDER THE TVTA

The federal government in 1967 shifted its policy from the training of youth to the training of adults. Federal officials believed they had a constitutional role in training and developing the adult labour force for economic growth and full employment. With the passage of the Adult Occupational Training Act of 1967 the TVTA Agreement was repealed and dismantled by the new post secondary arrangements. The last day of operation of the TVTA was 31 March 1967, but it was extended to 31 March 1970.

In reporting to the Legislative Assembly of Alberta, the Minister of Education the Honorable Mr. McKinnon (1967) said:

> In terminating the Agreement the Federal Government has set the upper limits of its capital support on a pro rata base established by the provincial population of the 16 to 19 year age group. From these calculations the federal allotment for Alberta at the termination of the Agreement has been computed at $79,204,000.00. This will involve total expenditures of approximately $126,725,000.00, the province's contribution being $47,521,000.00. (p. 4)

Nearly two thirds (64%) of the total expenditure went for construction of vocational education wings or building modifications to existing schools to house vocational education programs of study. The total amount that was spent to construct these facilities was in the neighbourhood of $80 millions of dollars in Alberta. "The remaining 36% was expended on provincially operated schools such as the Institutes of Technology and Agricultural Colleges" (p. 4). These expenditure included both buildings and the equipment for the various programs.

A major portion of the $80 millions of dollars went to the the large population centres of Calgary and Edmonton.

Clarke (1982) in A History of Vocational Education in the Calgary Public School System 1900 - 1982 reported:

> The Calgary Public Number 19 along with Edmonton Public No. 7 received the major portion of this financial assistance. From 1961-1969 inclusive, the Calgary Board was to receive $19,187,569.06 while the Edmonton Board was to receive $19,032,722.38. (p.70)
>
> . . . . . .
>
> In this eight year period, the Calgary Board used its allocation to construct and equip seven composite high schools that included a vocational wing and added vocational education wings to three other schools. The Edmonton Public School Board used its funds to build and equip four composite high schools with vocational education wings and to expand and equip six other high schools so that these schools had vocational education wings. (p. 71)

By 1963 the Alberta Department of Education had approved a total of 18 new vocational high schools or wings on existing high schools for vocational education instruction. The approved facilities were to be located at: Medicine Hat, Calgary (3), Bowness, Red Deer, Drumheller, Camrose, Stettler, Edmonton (3), Jasper Place (2), Grande Prairie and, Grouard. A vocational education wing was added to the Lethbridge Junior College. There were two satellite schools, one at Fort Chipewyan and the other at Fort MacMurray.

Approximately one year later, in 1964, the number of schools had increased to 21 providing educational space for 11,575 students. (Clarke, p. 69) In 1967 there were 25 composite high schools in the province that offered vocational education programs as well as programs in business education.

In discussing the impact the expenditures under this Act had on student places in Canada, Bryce (1970) pointed out that between April 1, 1961 and March 31, 1967, student places had increased by 40.7% to 439,952 from 108,000. Of the 439,952 student places that were generated by these expenditures, in 1969, 35,142 were in Alberta. (p. 270)

Starting with the 1974-75 school reporting year, Mr. R. H. Cunningham, Consultant in Industrial Education for Alberta Education, began to prepare a report titled: Statistical Information Pertaining to Senior High Schools Offering Vocational Programs. This report was to have a life span of only four years. The last of these statistical reports was prepared for the 1978 - 1979 reporting year.

The report for the 1974 - 75 reporting year shows that the number of composite high schools increased to 39 in 1975 from 26 in 1969. In these schools there were 470 facilities (shops) where 27 distinct vocational education courses were taught. Of these 470 facilities, 382 were used to teach the vocational education courses for which they were intended. The remaining 88 facilities were used to teach industrial arts, home economics, art, arts and crafts and regular academic subjects. (1979, p. 107) In the 470 vocational education facilities, there were a total number of 8,252 student stations of which 1,519 were not used.

In comparing statistical information in the 1978 - 79 report with similar information in the 1974 - 75 report it was found:

1. That the number of composite high schools that had facilities for vocational education had increased to 46 (1980) from 39 in 1975.
2. That the number of vocational education shops in these 46 schools had increased to 537 (1980) from 528 in 1975.
3. That the number of unused facilities decreased from 88 (1975) to 82 in 1980. This decrease may be attributed to the fact that facilities for locally developed courses taught at Shaughnessy, Van Horne and L. Y. Cairns were not included in this portion of the report.

The number of vocational education facilities grew drastically in the twenty years between 1963 and 1983. In 1963, the year that vocational education was introduced into the secondary schools of the province, there were 18 schools that offered a vocational education program of study. By 1983 the number of schools offering this program had increased to 52.

DESIGNING VOCATIONAL EDUCATION CURRICULA

Following the signing of the Agreement in 1961 between Ottawa and Alberta, personnel of the Department of Education moved quickly to establish curriculum committees to design vocational education curricula that could be implemented as soon as the facilities became available. These personnel fully realized that in addition to planning shops, identifying equipment needs, ordering the equipment, and planning appropriate programs, it was the responsibility of the Department to prepare curriculum guides for the various programs. These curriculum guides, after they were written, would have to be approved by the Curriculum Branch.

Prior to Alberta's signing of the Agreement the Chief Superintendent of Schools, Dr. T. C. Bryne, in a letter to the Deputy Minister of Education, Dr. W. H. Swift, proposed that a technical-vocational committee be established that would give consideration to appropriate high school programs in vocational education. (Minutes of the Thirty-fourth Meeting of the Senior High School Curriculum Committee, 1961, p. 15). This committee after it was formed would be partly responsible to the Senior High School Curriculum Committee and would make recommendations that concerned vocational education. According to Bryne in his letter, the Technical- Vocational Committee would also report to the Sub-committee on Planning, to the Board of Teacher Education and Certification, and have representation on the Provincial Advisory Committee on Technical Training.

In a later memorandum dated August 17, 1961 Byrne stated the need for establishing this committee was presented to the Minister:

> The need for the establishment of a Technical Vocational Committee for the Senior High School has been discussed and placed before the minister. My understanding is that tentative approval has been given to the establishment of this Committee. (Memorandum, August 17, 1961)

Information in this memorandum indicated the major function of the Technical-Vocational Committee to be the coordination for planning and organizing technical-vocational education in the high schools of the province. The responsibility for chairing this Committee was given to Mr. R.H. Cunningham, Supervisor of Industrial Arts with the Department of Education.

When the Committee was formed it had twelve appointed members from the following stake holding groups: The Department of Education (5); the large city school systems - Edmonton and Calgary (4); the Apprenticeship Board (1); and the Institutes of Technology (2).

To prepare curriculum guides for vocational education programs of studies a sub-committee structure for programming was established. A major task of this sub-committee was to propose a core program for vocational education which would be acceptable to: the Apprenticeship Board; the Technical Institutes; and the Federal Government. (Clarke, 1982, p. 74)

It was the position of the chairman of the Technical Vocational Committee for the Senior High School that the vocational education courses offered in the schools should be fairly uniform with respect to the theory taught, the equipment required, and the time spent in the learning of skills and the application of theory. In discussing these concepts and their implications for the new vocational education program, Grywalski (1973) wrote:

> such uniformity would assist in the granting of credits towards a high school diploma, permit the transfer of students from one school to another with a minimal amount of disruption in programmes, and enable the Department of Education to present a united front to the apprenticeship board, technical institutes and industry when recognition was being sought of the courses offered. (p. 220)

To prepare the curriculum guides that would be used with vocational education, personnel from the two large population centres, Edmonton and Calgary, were given the responsibility of preparing course outlines. The first drafts of these course outlines were then submitted to vocational education teachers in other schools for review, modification or acceptance. (Clarke, 1982, p. 76) Course outlines that were accepted as a result of this procedure were considered "interim" for a two year period before they received final approval by the Department of Education.

Closely related to the designing of course outlines for the various vocational education courses was the credit value that would be assigned for each course at the different grade levels. According to Clarke:

> Cunningham indicated that the Department of Education wanted approval for courses of five credits at the grade X level and twenty credits at the grade XI and XII levels. The courses that were developed for these grade levels would be designated "12", "22" and "32" respectively. (p. 76)

Completed Tentative Course Outlines

By January 1963 the various sub-committees working on the Commercial Art and Sheet Metal course outlines had approved outlines for these courses at the "12", "22", and "32" levels. The recorded minutes from the Thirty-eighth Meeting of the Senior High School Curriculum Committee (1963) show that vocational education teachers in Edmonton and Calgary had completed the following tentative course outlines:

> Automotives 12, 22 and 32
> Building Construction 12, 22 and 32
> Drafting 12
> Electricity 12, 22 and 32
> Electronics 22 and 32
> Food Preparation 12, 22 and 32
> Graphic Arts 12, 22 and 32
> Machine Shop 12, 22 and 32
> Pipefitting 12, 22 and 32
> Welding 12, 22 and 32
> First year Electricity/Electronics (12) contained common materials. (p. 6)

Content of the Curriculum Newsletter for August 1963 shows that twenty-two vocational eduction programs of study were to be offered in the facilities that were constructed under the terms of the TVTA Agreement. The programs that were listed include the following:

Agricultural Mechanics	Electricity
Appliance Repair	Electronics
Autobody	Food Preparation
Automotives	Graphic Arts
Beauty Culture	Institutional Service
Business Education	Machine Shop
Cabinet Making	Pipe Trades
Carpentry	Printing
Commercial Art	Radio & T.V. Repair
Data Processing	Sheet Metal
Drafting	Welding (p. 3)

It was evident from what Cunningham and Chalmers wrote in the Curriculum Newsletter that the list of courses was tentative and that "other courses may be added as the need arises: others may be dropped if and when they are no longer needed" (p. 3). When that newsletter was published an unofficial decision was made by personnel of the Department of Education that a maximum of 10 of the 22 courses listed in the August 1963 Curriculum Newsletter would be offered in most schools where vocational education was taught. (Clarke, 1982, p. 78)

With the publication of the Curriculum Newsletter in September, 1963, the Department of Education endorsed the following twelve vocational education

programs of study and prepared curriculum guides for these programs using its sub-committee structure:

Automotives
Carpentry 12 and 22
Commercial Art 12 and 22
Beauty Culture 12 and 22
Drafting 12 and 22
Electricity 12 and 22
Electronics 22
Food Preparation 12 and 22
Graphic Arts 12 and 22
Machine Shop 12 and 22
Pipe Trades 12 and 22
Welding 12 and 22. (Curriculum Newsletter 14, 1963, p. 1)

For these and other vocational education courses approved by the Department of Education high school credit would be granted. A problem was created in 1963 when the question of granting credit for locally developed courses was presented to Cunningham, chairman of the Technical-Vocational Committee for the Senior High School. According to Clarke, (1982) Cunningham's reaction was "that local school boards could develop their own courses and they would not be recognized for credit" (p. 78).

Central Office administrators within the Calgary Public School Board took an opposite position to Cunningham. Their position was that students should not be placed in a program that fails to grant high school credit. This issue was finally resolved by the Director of Curriculum for the Department of Education when he accepted Calgary's position and made the following recommendations:

> that tentative credits be given to students who successsfully completed course requirements for "15" courses at the grade X level. Provincial sub-committees would examine "15", "25" and 35" courses for approval providing Calgary would accept any revisions considered necessary. In Alberta, courses in vocational education that are locally developed and are approved by the minister are designated as "15", "25", "35" courses. (Clarke, p. 79)

As a result of the director's recommendation vocational education courses were given two numeric designators, those that end with "2" or those that end with "5". Courses that end with a "2" i.e., 12, 22, 32 were reserved for provincially designed courses while those that end with a "5", i.e., 15, 25 , or 35 were for locally developed courses.

Students who enrolled in these courses and other vocational education courses, i.e. locally developed courses, approved by the Minister of Education, would be granted high school credit. Early in December 1963, the Department of Education informed school jurisdictions throughout the province that facilities built under the TVTA Act had to provide 35 of a possible 100 credits that would lead to a high school diploma in vocational education.

To receive high school credit in any course academic or vocational a student must receive a minimum of 25 hours of instruction per credit. Instruction is very broadly defined by the Department of Education to include: instruction per se, examination, and other student activities directly related to the course for which credit is to be granted. (Junior-Senior High School Handbook, 1982 - 83, p. 13)

With the exception of Commercial Art and Beauty Culture, interim curriculum guides had been prepared for the eleven remaining vocational education programs of studies. It was not until 1969 that a curriculum guide was released by the Curriculum Branch for Aircraft Maintenance 12, 22, 32.

Revision of Curriculum Guides

Curriculum Guides that were distributed by the Curriculum Branch for vocational education programs of study approved by the Department of Education until 1969 carried the title "Vocational Series", i.e., Vocational Series, Drafting 12, 22, 32. After the 1968/69 school year vocational education and industrial arts were placed under the rubric of "Industrial Education". The twenty vocational education programs of study that were in place at that time were amalgamated, under the Industrial Education Program, into seven career fields: Construction and Fabrication; Mechanics, Electricity/Electronics; Visual Communications; Personal Services; Performing Arts; and Horticulture.

During the 1972 - 73 school year and in subsequent school years, interim curriculum guides were published for the following vocational education courses in the seven career fields, which are outlined in the following table:

Table 2

Interim Industrial Education Curriculum Guides

Published 1972-73 for Vocational Education Courses

CAREER FIELD Industrial Education	VOCATIONAL EDUCATION Program of Study	YEAR OF PUBLICATION
CONSTRUCTION AND FABRICATION	BUILDING CONSTRUCTION	1972
	12 A, B, C	(1974)
	22 A, B, C	
	32 A, B, C	
	MACHINE SHOP	1974
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	PIPING	1979
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	SHEET METAL	1979
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	WELDING	1972
	12 A, B, C	1974
	22 A, B, C	
	32 A, B, C	
MECHANICS	AIRCRAFT MAINTENANCE	1974
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	RELATED MECHANICS	1973
	12 A, B, C	1975
	22 A, B, C	
	32 A, B, C	

Table 2 (continued)

	AUTOMOTIVES	1972
	12 A, B, C	1974
	22 A, B, C	
	32 A, B, C	
	AUTOBODY	1972
	12 A, B, C	1974
	22 A, B, C	
	32 A, B, C	
ELECTRICITY/	ELECTRICITY	1974
ELECTRONICS	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	ELECTRONICS	1975
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
VISUAL COMMUNICATIONS		
	GRAPHIC ARTS	1974
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	COMMERCIAL ART	1972
	12 A, B, C	1974
	22 A, B, C	
	32 A, B, C	
	DRAFTING	1972
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
PERSONAL SERVICES	FASHION & FABRICS	1972
	12 A, B, C	1975
	22 A, B, C	
	32 A, B, C	

Table 2 (continued)

	FOOD PREPARATION	1972
	12 A, B, C	1975
	22 A, B, C	
	32 A, B, C	
	HEALTH SERVICES	1972
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	BEAUTY CULTURE	1973
	12 A, B, C	1975
	22 A, B, C	
	32 A, B, C	
PERFORMING ARTS	PERFORMING ARTS	1975
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
	TELEVISION	1973
	12 A, B, C	
	22 A, B, C	
	32 A, B, C	
HORTICULTURE	HORTICULTURE	

Curriculum in Alberta is a highly structured activity which is the mandate of Alberta Education through its Curriculum Branch. Sections 12 and 13 of the revised School Act give direction to the policies of the Curriculum Branch. It is the responsibility of this branch to provide leadership for the development of curriculum in all school programs in the provincial educational system from kindergarten through grade XII.

Curriculum Ad Hoc Committee

In Alberta the vocational education curriculum can be designed in one of two ways, through the use of Curriculum Ad Hoc Committees or by contractors. The 1972 interim curriculum guides and later guides were designed using the

structure of Curriculum Ad Hoc Committees. These Committees are part of a network that includes: the Director of Curriculum; five Associate Directors; the Curriculum Policies Board; the Program Approvals Committee; sixteen Curriculum Coordinating Committees; Ad Hoc Committees as needed; and Contractors. The latter are employed should the need arise. The line chart shown in Figure I illustrates the three-tiered structure for curriculum development that is used in the province.

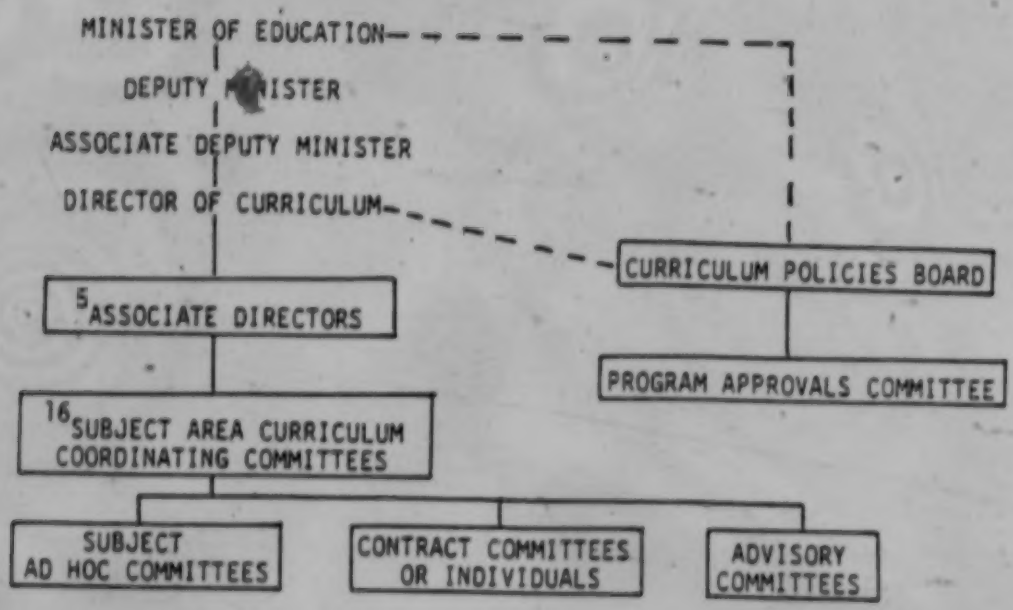


FIGURE 1: Three-Tiered Structure for Curriculum Development
adapted from Harder, 1980 (p. 4)

Each of the 16 Subject Area Curriculum Coordinating Committees have a Representative Committee structure that includes: Alberta Education personnel; practising teachers, one supervisor from a major school system; and a representative from the Apprenticeship Branch. The teacher members, who represent 50% of the committee members are recommended by the Alberta Teachers' Association. The Curriculum Branch appoints one representative from a major school system. The chairman of each curriculum committee is appointed by Alberta Education.

The curriculum cycle in Alberta is decennial based. For this cycle each curriculum director develops a five year plan for the first phase of the cycle that will allow for the development of the curriculum to its implementation. During the second five-year phase ongoing programs are formatively evaluated and future needs are assessed.

The process of curriculum development in Alberta is based on two major steps: program proposal approval and content approval. Proposed program approval is the responsibility of the Curriculum Policies Board while content approval is the responsibility of the Program Approvals Committee.

SUMMARY

Chapter II of this study was presented in order to provide the reader with background information on the evolution of vocational education from 1905 to the present, 1983.

There are a number of Albertans who in completing the requirements for an advanced degree elected to complete research on the development of industrial-arts or vocational education. Among these researchers were: Simon (1962), Harder (1964), Bryce (1970), Grywalski (1972), Smith (1973) and Clarke (1983). Much of the information for this chapter was gathered from these sources. The researcher provided a short abstract of each study as part of the content of Chapter II.

The origins of vocational education in Canada can be traced back to 1642, when the Catholic church had the responsibility for the education of this nation's youth. However, the main impetus for vocational education occurred in 1900 with the implementation of the MacDonald Manual Training Plan. Alberta, as well as the rest of the provinces, was able to benefit from the funds received

from this Plan. The MacDonald Manual Training Plan was under the leadership of Dr. James Robertson.

Agricultural education played a significant role in the development of vocational education subjects in Alberta, and this field of study was guided by the agricultural leaders at both the national and the provincial level, particularly the United Farmers' of Alberta (U.F.A.). Agricultural education was deemed necessary due to the fact that Alberta's economy was largely agrarian at that time. The major objective of agricultural education was to revitalize the rural areas of Alberta, through the use of courses in nature study, school gardening, and agriculture (Sheehan, 1980, p. 109), and in the 1910-11 school year, agriculture as a course as offered in the Alberta schools. Agriculture as a secondary school subject ended in failure because the teachers were poorly trained and because provincial and federal departments of agriculture moved the science of agriculture beyond the understanding of the average teacher who taught the course.

The U.F.A. felt that schooling in Alberta was too narrowly oriented toward the university bound student, and, as a result revised curricula so that a wider choice of subjects was made available to students who would not attend university. Another educational precept that was introduced by this political party was promotion by subject or unit. Courses were organized to include: General, Normal Entrance, Agricultural, Commercial, Technical, and University Entrance.

In addition to the involvement of the provincial government, the federal government provided many financial incentives to the provinces for the guidance and development of vocational education across Canada. The first of the cost shared programs between Ottawa and the provinces occurred in 1913 and was titled the Agricultural Instruction Act. The need for this Act was established by the Royal Commission on Industrial Training and Technical Education (1910). Under the direction of Dr. James Robertson, the Commission recommended that the Federal government make occupational training available to both adults and the youth of this country. The result was a series of Acts pertaining to vocational education. These Acts, and the year they became effective, are listed below:

Agricultural Instruction Act	1913
Technical Education Act	1919
Vocational Education Act	1931

Youth Training Act	1938
National Forestry Program	1938
War Emergency Training Plan	1940
Vocational Training Coordination Act	1942
Technical and Vocational Training Assistance Act	1960

By far the most significant of these acts was the TVTA of 1960-67, in which more moneys were spent for vocational and technical education than all of the other acts combined.

The change of requirements dictated by the TVTA Act necessitated the writing of the Provincial Curriculum Guides, and by 1963, the following guides were published:

Automotives 12 and 22

Carpentry 12 and 22

Commercial Art 12 and 22

Beauty Culture 12 and 22

Drafting 12 and 22

Electricity 12 and 22

Electronics 12 and 22

Food Preparation 12 and 22

Graphic Arts 12 and 22

Machine Shop 12 and 22

Pipe Trades 12 and 22

Welding 12 and 22

As the needs of the educational system of the province changed, so did the curriculum guides, and the twenty vocational education programs of study were placed into seven career fields of industrial education in 1968: Construction and Fabrication; Mechanics; Electricity/Electronics; Visual Communications; Personal Services; Performing Arts; and Horticulture. This was the first major step in the development of the industrial education concept in Alberta.

The concept of industrial education in Alberta grew out of two distinct, yet similar programs of study, industrial arts and vocational education. The vocational education program has been presented in this chapter. Chapter III will present an overview of the evolution of the industrial arts in Alberta. The development of the concept of industrial education will be presented in Chapter IV.

CHAPTER III

AN OVERVIEW OF THE EVOLUTION OF INDUSTRIAL ARTS IN ALBERTA

Introduction

A major portion of the content of the second chapter placed emphasis on the development of vocational education in Canada and in the province. Reported in that chapter were selected federal enactments that provided federal conditional cost-shared funding to the provinces to support both secondary vocational education and post secondary technical education. These acts were permissive legislation which permitted provincial governments to participate providing they signed an agreement with Ottawa to abide by the terms of the act and the schedule that accompanied a particular act.

A significant feature of the Technical and Vocational Training Assistance Act to support vocational and technical education was the fact that no federal moneys could be used to support any form of manual training or industrial arts. (Preitz, et. al. 1983, p. 8) The majority of the moneys to support industrial arts came from the local tax dollar.

The history of industrial arts in Alberta has evolved through five discrete, but overlapping periods in its development. This subject area has been in a constant state of evolution since it was first introduced into the educational structure of the North-West Territories as manual training in 1900. Since then it has evolved through:

Manual Training/Manual Arts	1900-1926
Technical Education	1913-1936
Technical Electives	1936-1944
Industrial Arts	1944-1969
Industrial Education	1969-1983

MANUAL TRAINING/MANUAL ARTS

For a majority of the students who attended school during Alberta's Territorial period, their schooling was exclusively limited to either a Grade VII or VIII education, except for those students who would continue their education at university.

Prior to 1905, much of the education of the students of the North-West Territories was provided by missionaries of the various religious sects. These

missionaries in addition to teaching religion also taught the basics of education and also attempted to teach various manual skills that were related to agriculture and to maintaining a homestead on the prairie.

The genesis of industrial arts and vocational education in Alberta has been traced to the MacDonald Manual Training Plan, 1900-1903, when in 1900 Calgary was selected as one of the twenty-one manual training centres across the Dominion to participate in this Plan. When the Plan ended in 1903, it was regarded by educators in Calgary as a success and manual training was absorbed as a program offered by the Calgary Public School Board. The acceptance of this Plan helped to prepare the way for the introduction of Manual Training into the secondary schools of Alberta.

One of the first acts of the provincial government after it was granted provincial status was to establish a normal school in Calgary in 1906. The principal and vice principal of this school were assisted by teachers from the Calgary Public School. Among these teachers was Mr. J.E. Runions, Supervisor of Manual Training. In the town and city schools the subjects of Manual Training, Music, Drawing, Art Work in its various forms, Domestic Science, and Kindergarten were receiving increased attention by educators. Because the normal school course for the preparation of teachers was only four months in duration, it was impossible to teach these subjects in a thorough and systematic manner.

When the Normal School building was completed in 1907, a leading western daily described the facilities for Physical Culture and Manual Training in this way: "In the basement are to be found the gymnasium (having baths in connection) the fittings of which are the most modern procurable. There is also a room to be devoted to manual training" (Annual Report, 1907, p. 16). In August of 1907 J.C. Miller was added to the staff of the normal school to teach Manual Training as well as writing, hygiene and physiology, and physical culture.

J.W. Brown of the Medicine Hat Inspectorate reported: "Medicine Hat and other school boards are contemplating the establishment of Manual Training and Domestice Science" (p. 52).

In 1908 the Calgary School Board had special instructors in charge of manual training and music. During that year, the Edmonton Public School Board introduced Manual Training into its schools and used Woodworking and Blacksmithing as learning activities. There were twelve schools in Edmonton

that had a well-equipped manual training room, where classes were taught by two supervisors, assisted by a teacher in charge of each grade.

Because of high building costs and the cost of equipment for special programs, the physical part of the Normal School Calgary was being completed in phases. In 1909 the Practice Schools were added; as well, a fairly complete woodworking department was added for Manual Training.

Because of overcrowding at the Calgary Normal School a second normal school was opened in Camrose in 1913 under the principalship of Dr. J.C. Miller. This school was located in quarters supplied by the Camrose School Board. These quarters provided accommodation for the Departments of Household Science and Art, Elementary Manual Training, Woodwork, and Science. Although these departments were in temporary quarters, they were organized and equipped to receive students. In these quarters, the Department of Manual Arts occupied two rooms on the second floor and two rooms in the basement. Eight years later, in Edmonton, a the third normal school was opened. These three normal schools were operated by the Department of Education and were distinct entities from the University of Alberta, which was chartered in 1908 under the University Act. The Department of Education maintained control over the normal schools until 1945, when all teacher education became the responsibility of the university.

Prior to his appointment as principal of the Camrose Normal School, J.C. Miller resigned his position of instructor of manual training at the Calgary Normal School to complete the requirements for Doctorate of Philosophy in Education at Columbia University. It is possible that, because of his exposure to leaders in the manual training movement in the United States he began to use the term Manual Arts instead of Manual Training. It is evident from what appears in documents of the Department of Education that personnel of that department used the terms Manual Training and Manual Arts as synonyms until 1926 when Manual Arts I and Manual Arts II were included as a course of study for the senior high school.

First Technical High School

The first technical high school in the province was opened in Edmonton on October 15, 1912, and had an enrolment of 12 students. The programs that were offered in this school included both day and night classes. Among the courses offered were: English, Mathematics, Industrial and Commercial History and Geography, Civics, Hygiene, Free Hand Drawing and Design, Mechanical

Drawing, Home Economics, Woodworking and Printing. By 1914, the enrolment for day classes was 224 students and for evening classes 528 students. In discussing this school in the Annual Report for 1915 Dr. Miller described the work of this school as giving pre-vocational, vocational, and technical instruction. (p. 74) This school operated until 1943. When it was closed by the Edmonton School Board, the Board made the commitment to replace it at some future date with a large composite high school. Teachers from the technical school were distributed throughout the system and the students were placed in academic schools.

As a result of a Department of Education Survey, conducted in 1913 with the various stake holder groups throughout the province, the first major revision of the program of studies was undertaken. That revision included the introduction of system of twelve grades which included public or elementary school grades I to VIII and high school grades IX to XII. Provision was also made for the teaching of "special" subjects such as: Art, Manual Training, Household Economics, and Health. The learning activities in elementary manual training, according to Fife (1913) of the Edmonton Inspectorate, included: construction work with paper, such as folding, cutting, pasting; clay modeling; raffia; basketry and mat weaving which was taught in Grades I to VI and shopwork in grades VII, VIII, and IX (Annual Report, 1913, p. 72).

During that year, the School Grants Act was legislated. It provided grants to school boards to encourage the teaching of agriculture and the following special subjects: manual training, domestic science, art, music, and physical culture. (Annual Report, pp. 11-18) Special grants made to participating school boards under this Act had to meet the regulations and had to have the approval of the Department of Education.

Because manual training teachers were inadequately prepared, pre-service teachers attending both the Calgary and the Camrose Normal Schools, were given a course of instruction in Manual Training and Domestic Science. This instruction was extended to the first Summer Session for Teachers, 1913, which in addition to these two subjects also included: Agriculture and Gardening, Nature Study, Elementary Manual Training, Woodwork, Physical Training, Art Methods, and Drawing and Design.

Economic Conditions Impact on Manual Training

In February 1913 Lethbridge opened its manual training building which had been under construction for two years. Unfortunately, because of poor economic conditions caused by crop failures, early in 1915, the school board made the decision to close the manual training school, store the equipment, and transfer the high school to the manual training school building. (Annual Report, 1915, p. 37) The pre-vocational class that had been organized in this district was also disbanded. In addition, the Director of Technical Education, the instructors in household arts, the Supervisor of Elementary Manual Training, the Supervisor of Art, and the Supervisor of Physical Training were all required to resign. (p. 37)

Similarly, Medicine Hat also closed both the departments of manual arts and household arts and released the teachers in charge of these departments.

These economically pressing times in the province also had an impact on both the large cities. In Calgary, with the exception of the Supervisor of Physical Training, as well as in Edmonton, all supervisors were reduced to the rank of teacher. However, in both cities, regular classroom instruction in manual training was retained.

In the two cities where the Provincial Normal Schools were located, Calgary and Camrose, there was cooperation between the local school board and the administration of the normal schools to permit high school students to take programes in Art, Manual Arts, Household Arts and Physical Training using the facilities of the normal school.

While these changes were under way, on November 2, 1914 an Order-in-Council was signed by the Lieutenant-Governor that provided special grants in support of technical education. These special grants were given to support instruction in manual training; night class instruction; pre-vocational, vocational and technical day classes; and special instruction in Art, Music, Physical Training, Writing or Primary Work. To qualify, for these grants the organization, accommodation, equipment, courses of instruction as well as the instructors and supervisors had to be approved by the Minister of Education. Under this Order-in-Council school boards could receive partial grants at the discretion of the Minister.

Director of Technical Education Appointed

One of the most significant clauses of this Order-in-Council, for the development of technical-vocational education in Alberta, called for the

appointment of a Provincial Director of Technical Education. The first Director of Technical Education, Dr. J. Miller, was appointed in 1914 and had responsibility for co-ordinating and supervising special subjects that would be eligible for grant support. The Director was responsible for the following programs of study: Manual Training, both elementary and secondary; Household Arts; Art; Music; Physical Training; and Agriculture and Gardening.

Prior to his appointment, Dr. Miller served as the principal of the Normal School at Camrose. Dr. Miller held the position of Director of Technical Education until 1916, when he was appointed District Vocational Officer for the Military Hospitals Commission. As a consequence of that appointment, technical education did not have a director until 1919, when D.A. Campbell was appointed to that position. When the new director was appointed, he was also given the responsibility of principal of the Provincial Institute of Technology and Art which was established in Calgary in 1914.

Instruction in manual training continued to improve and the introduction of this type of program into the schools was the first step toward a more practical form of education for the older boys. Making a distinction between Manual Training and Technical Education, Campbell in the 1919 Annual Report wrote:

> Instruction in both of these [manual training and household science] as conducted in the public and high schools is not classified as technical education. Manual training and household science are considered as instruments in general education. (p. 106)

Under normal circumstances, instruction in Manual Training was given half a day per week. According to Campbell, the time allotted to the practical work of technical education was usually half a day per week. The aim of technical education was to prepare students for gainful employment in some specific vocation. Both pupils and parents found technical education appealing and where this program was introduced it helped to prevent senior high school students from leaving school early.

The quality of instruction that was given in Manual Training continued to improve. The improvement was attributed to the influence of the Manual Training courses that the teachers completed at either the Provincial Normal Schools or at the Summer School for Teachers. With the onset of the First World War, it was next to impossible for the schools to secure many of the materials and media that were used in elementary manual arts.

At the end of that war, the academic subjects continued to hold the premier position in the curricula of the schools of the province. However, courses in elementary and secondary Music, Art, Commercial Subjects, Manual Training and Household Science were given recognition through the generous grants provided to the school boards by the Department of Education. According to J.T. Ross, (1919) Deputy Minister of Education:

> The grant to the large cities where these subjects are being taught is twenty per cent of the teachers' salary and ten per cent of the value of the equipment, while in the smaller centres more liberal grants are offered, with a view of encouraging school boards to secure specialists to teach these subjects and to assist in providing equipment. (pp. 10-11)

This legislation also made it possible for two school boards to unite in the employment of teachers for special subjects. As an inducement for these boards to cooperate, in addition to the grants for the purchase of equipment, grants were made to pay the salaries and travelling expenses of teachers. (Campbell, 1919, p. 102)

In 1920, when Alberta began to emerge from a war-time economy to a peace-time economy Manual Arts was under the direction of a special supervisor in each city district. In Manual Arts the course of study included elementary plane geometry, the construction and reading of working drawings, calculation of quantities and cost of materials, talks on lumber with benchwork for Grades VI to VIII which involved the making of wooden toys. (Lord & LaZerte, 1920, p. 109)

Manual Training continued to progress satisfactorily. By 1920, there were 11 centres in Edmonton, and 10 centres in Calgary. The learning activities of Manual Training were broadened to include instruction in metal and electricity in addition to wood. (Campbell, 1920, p. 134) At the beginning of the school year, September 1920, the Department of Education announced that Manual Training would be an optional subject in Grade IX. As a result of that announcement, approximately 75 per cent of the boys in the City of Edmonton selected Manual Training as their option. (Campbell, p. 134)

The following year there were 23 individual schools in the province equipped to teach Manual Training and there were 45 teachers who taught this course. Manual Training was introduced in Grade VI and VII, and continued through Grade XI where metal, forging and machine shop, were used a teaching media instead of Wood. Practical work in electricity and an introduction to sheetmetal were introduced as learning activities in the intermediate grades.

Education leaders in the Department of Education in 1922 attempted to add flexibility to the curriculum when they introduced the requirement of twenty-one units that were needed to complete the standard course of secondary education. It was suggested that the twenty-one units be divided in this manner: six in Grade IX, seven in Grade X and eight in Grade XI. One of the optional subjects was manual training which could be taken for two units.

Dr. Coffin, principal of the Calgary Normal School in his portion of the 1924 Annual Report indicated that 10 industrial arts students had to write supplemental examinations in December of the previous year. This was the first time that the term industrial arts was used in an official publication of the province. Of the 37 students who failed the program at the Calgary Normal School, in 1925, two were classified as industrial arts students. (Coffin, 1925, p. 42) During that year the Edmonton Public School Board curtailed the scope of both its manual training and household science departments. To personnel of the Department of Education this curtailment was serious. There was no curtailment of these programs in Calgary.

Manual Arts I and Manual Arts II

Smith (1973) indicated that "in 1926, Manual Arts I and II was included as a course of study for secondary schools" (p. 48). Prior to 1926 manual arts was limited to Grades VII and VIII. The Manual Arts I program of study included learning activities in drafting, cabinet work, wood carving, and carpentry. Manual Arts II, in addition to offering drafting, also offered learning experiences with forging, sheet metal and machine shop. In addition to these courses, technical courses were being offered in special technical schools. These schools were emphasizing vocational work rather than academic work. Because of this the Department of Education planned to carefully review the curriculum of these schools. In these schools technical courses were available in woodwork, metal, electricity, and motor mechanics.

In 1928 the City of Calgary was constructing a technical high school and in anticipation of its opening, committees of the Department of Education began to work on details of a curriculum. In carrying out this work, these committees had agreed on the subjects to be taught and their related values. Students who completed these courses would be granted credits on their attainment similar to those credits that were granted for academic subjects. While these two- year course outlines were being prepared, provision was also being made to provide a third year course in 1930. (Ross, 1929, p. 10)

TECHNICAL EDUCATION

The Calgary Public School Board made the decision to provide for a two year program of study in technical education and to combine it with academic education in the school with a probable enrolment of 500 students. When the technical school opened in September, 1929, it had an enrolment of approximately 150 students. In this school there were four shops where electricity, wood, motor cars, and metal were taught. Also in this one-story, factory-type building there was one room for industrial arts. (Carpenter, 1929, p. 75)

Because of the increasing interest in technical education and its ripple effect on the demand for technical teachers, the Director of Technical Education took the position that the Department of Education should begin to consider a program for training teachers. Dr. Carpenter was of the opinion that "this function could be easily worked out in the technical institute" (p. 75). Although there was growing demand for technical and pre-vocational education throughout the province because of financial conditions, there were only a few centres that had the moneys to provide the equipment or the teaching staff required to operate a technical school.

A year later, in 1930, the Edmonton School Board elected to introduce the new technical education curriculum into the technical high school. However, the citizens of Edmonton did not endorse a by-law that would have provided funds for an expansion of the technical school. Additional accommodation was needed in the Motor Department and for facilities where the Sheet Metal and Electricity programs of study could be taught. (Carpenter, 1930, p. 87)

The new technical education course of study that was introduced in the technical high schools was based upon an English, History, and Geography core, a core of subject similar to that of the academic schools. General mathematics and general science replaced algebra, geometry, physics and chemistry. The course of study was designed so that the student devoted half-time to classroom studies and half-time to shop experience.

To ensure that a high standard of instruction and student performance was attained both a practical and a written examination were administered to the students before credit was granted. These examinations were designed by specialists who wanted to evaluate the work done in the shops and in the drafting rooms. The practical examination was three hours in duration and was given to

each student at the end of the term. In addition there was a three- hour written examination that was administered at term's end. The purpose of these examinations was to make the value of the training equal to the straight academic subjects. (Carpenter, 1930, pp. 86-87)

The demand for technical and vocational education increased throughout the province, and a few of the smaller centres and villages considered introducing the program when financial conditions improved. In the rural areas of the province, there was an increased desire to incorporate manual subjects into the program of studies. Because of this phenomenon, the Director of Technical Education thought it would be advantageous "to draft a definite outline of studies differing from that used in the urban centres and more adaptable to rural conditions" (Carpenter, pp. 67-68).

Enrolments in the technical high schools continued to grow to 757 (1932) from 713 (1931) in Calgary and to 586 (1932) from 446 (1931) in Edmonton.

The Assistant Registrar for the Department of Education in the Annual Report for 1933 wrote, "During the year a total of 18,966 candidates wrote the mid summer examinations" (p. 21). Forty-seven of these examinations were held in the following subject areas:

Building Construction I	Food and Dietectics I
Cabinet Work I	Industrial Crafts I
Carpentry I	Metal 2
Drawing and Design 2	Metal 3
Electricity 2	Motor Mechanics 2
Electricity 3	Motor Mechanics 3

These examinations were held in Calgary and Edmonton with eight candidates completing the requirements for the three-year technical course. "Two of the 610 candidates who secured an honours standing were technical students" (p. 21).

During the 1935 school year the Department of Education began to study the structure of education that had been in place in the province since 1912 with the idea of reorganizing it. The structure of education from 1912 to the start of the study consisted of the elementary Grades I to VIII while the high school Grades were IX to XII. When the structure of education was reorganized, it provided for removing grade IX from the high school and placing it with Grades VII, and VIII to form the intermediate school (Junior High School). As a result of the reorganization, the educational structure in the province included Grades I to VI, elementary school; Grades VII to IX, intermediate school; and Grades X to XII, high school. The term intermediate school was changed in 1949 when the term "junior high school" came into use.

The new structure at the intermediate grade level comprised

> Five Compulsory Subjects, English, Mathematics, Social Studies, General Science, and Health and Physical Education, together with Three Optional Subjects to be selected from the following: Junior Business, Art, Dramatics, Music, Oral French, General Shop and Household Economics. (Newland, 1936, p. 14)

This new program for Grade IX along with the revised programme for Grades VII and VIII was printed as the Programme of Studies for the Intermediate School.

TECHNICAL ELECTIVES

The new structure for education had an impact on technical education, erasing the lines that formerly split technical and commercial education from academic education when technical education was placed on a credit basis. Students were eligible for a high school diploma after they had earned 100 credits in high school. With the introduction of the credit system, it became mandatory for students to attend school because there was a correlation between credits and instructional time per week. One credit was equated as thirty-five minutes of instructional time per week.

Under the reorganized program, high school students were required to take a core of three subjects that were compulsory for all students. These subjects were: English, including literature and language; Social Studies; and Health and Physical Education. Students were permitted to elect other subjects according to their interests and aptitudes. Technical subjects that a student could take included:

Metal work I
Woodwork I
Electricity I
Printing I
Arts and Crafts I
Arithmetic and Mensuration I
Physics of the Home
Fabrics and Dress I
Home-making I

Every subject of the new program carried as many credits as the number of periods per week that were devoted to instruction in the subject. Under this system it was possible for a student to earn thirty-five credits per year. The school day was divided into eight class periods, one of these periods being a mandatory study period. Of the forty periods of a school week, thirty-five had to be devoted to instruction.

Technical courses, like Academic and Commercial courses, were put on a basis of thirty-five credits per year "with provision for at least seven Grade X credits and ten Grade XI credits, in optional subjects that are not vocational" (Newland, 1937, p. 21).

Dr. Carpenter was of the opinion that the new program would only have minor changes in the technical school and the commercial school progams. Students in these programs would be a year older before they graduated. He was also of the opinion the range of options available to the intermediate school student made it possible to include "expressive" subjects such as general shop and home economics.

Prior to 1936, Albertans who aspired to receive a degree that would qualify them to teach shop subjects had to attend an American college or university. Because of a perceived need for additional teachers of these subjects, the Director of Technical Education thought that this type of program should be available within the province. According to Dr. Carpenter (1936):

> The logical place at which to initiate this work is the Provincial Institute of Technology and Art in cooperation with the Normal School. I think something should be started in this line in the fall of 1938. During the past two years teachers with professional training have enrolled in the Institute for practical tool using experience. A splendid training in making things is being given these young people. (p. 74)

The elective or optional courses of the intermediate school were: Cultural Appreciation courses; Exploratory courses; and Prevocational courses. Cultural Appreciation courses were used to train the student for leisure-time hobbies and educational pursuits and included such courses as music, art, craftwork, dramatics, school band and orchestra. Exploratory courses were those courses that would allow the student to explore their personal resources through appropriate intelligent activities. Among these courses were: General Shop, Commercial and Industrial Art, Home Economics, Typewriting, and Bookkeeping. Prevocational courses were similar to the exploratory courses except that they were specially adopted to the needs of pupils whose educational limit would be reached before they entered Grade IX.

Many school boards made a generous response to the demands of the new program by installing equipment that was required for teaching General Shop. By 1937, thirty new centres provided facilities where General Shop could be taught. Carpenter (1937) reported "all the large centres in Alberta are well equipped to offer these options". (p. 76) A year later there were twenty-five centres that were offering General Shop at the Grade X level. There were forty-six districts offering General Shop at the intermediate school level. Some of the factors that excluded General Shop as an option in the small schools were: the

cost of equipment; the lack of special accommodation where the course could be taught; and the lack of a teacher with the required qualifications.

In order to teach general shop as a special subject, a years' attendance in a special shop course at the Provincial Institute of Technology was required. Normal School training was a prerequisite for those who wanted to take this course. This course included subjects in pedagogy as well as practical subjects which included woodworking, metalwork, electricity, art and design, and drafting. In 1937 there were fourteen students enrolled in this teacher preparation program for general shop teachers. (Carpenter, 1937, p. 76)

With the termination of the technical and commercial high school as distinct educational institutions and their amalgamation with the academic high school into an entity, the composite high school concept began to evolve in the province. Calgary Public School Board was the first to establish a composite high school in the Western Canada High School. The cities of Medicine Hat and Lethbridge enriched their programes by unifying commercial and shop subjects with academic subjects. In Edmonton the composite high school concept was gaining favor among educationalists.

Dr. Newland (1938), Supervisor of Schools for the province, in his portion of the Annual Report wrote: "The revised programme for Grade XI was introduced in September 1938, and the revised programme for Grade XII will be ready for use in September 1939" (p. 14). English and Social Studies were the two compulsory subjects for Grade XI and there were four groups of electives from which a student could choose courses. These elective courses were categorized as Group A, B, C, or D, Electives in Group A were classified as Academic; those in Group B, Commercial; Group C, Technical; and Group D, General. Technical electives and their credit values included:

Woodwork 1 or 2 for 8 credits
Metalwork 1 or 2 for 8 credits
Electricity 1 or 2 for 8 credits
Printing 1 or 2 for 8 credits
Arts and Crafts 1 or 2 for 8 credits
Fabrics and Dress 1 or 2 for 8 credits
Homemaking 1 or 2 for 8 credits

From this list of courses the student could elect not more than two subjects. In making this selection, the Grade XI student would elect the first unit, i.e., Woodwork I, but not the second unit. That unit could be elected in Grade XII. For shop courses the eight periods were distributed in this manner: Theory, 2 periods; Drawing and Design, 2 periods; and Shop Practice, 4 periods.

For the two shop courses, fifteen, not sixteen, periods per week were required. (Newland, p. 15) The elective for Group D was General Shop 2, which had a weighting of 4 because it was taught four hours per week. To teach this course the teacher had to have the special qualifications previously discussed.

GENERAL SHOP

When the structure of education was reorganized in Alberta in 1938, Manual Arts became General Shop both in the intermediate and in the high schools of the province. With this name change every effort was made to broaden the program by adding different media and learning activities. To illustrate, learning activities under Manual Arts were woodworking, metalwork, and drafting. Under General Shop 1, automotives and farm mechanics were added to these three activities. In General Shop 2, these same units were available, as well as units in gas engines and plastics. Personnel of the Department of Education produced a complete revision of the general shop and home economics program for the intermediate school and the high school. There were during 1938, 25 centres offering General Shop and 10 centres offering mechanical drawing at the Grade X level. At the Grade IX level and lower, there were 46 school districts teaching General Shop.

In 1939, there were 118 rooms that accommodated general shop. The number of high schools outside the cities offering instruction in general elective subjects were 62 - General Shop I and 13 - General Shop 2. There were fewer schools that offered the second course in general shop. In commenting on these accommodations the Director of Technical Education, Dr. Carpenter (1939), wrote:

> In the majority of schools the basement furnishes the accommodation, many of which are not very well suited to their purpose, being dull, dark and unattractive. . . . The equipment is not lavish. Schools introducing these subjects have been advised to be conservative in their initial expenditures for tools and equipment, but to provide an annual sum in their estimates to secure an adequate equipment. (p. 79)

Continual growth in providing General Shop in the schools of the province was evidenced in 1939 when 132 school districts were giving instruction in this practical subject. Because there was an adequate supply of general shop teachers in 1939-40, there were no teacher preparation classes held at the Institute of Technology. Because of the band-aid nature of this program, the Director of Technical Education advocated that at the earliest moment the

Department of Education set up a permanent teacher education program for both General Shop and Home Economics. (Carpenter, p. 80)

Even in spite of the war the number of centres offering general shop continued to grow. Wherever it was offered this course was very popular with students, parents, and teachers alike. The Deputy Minister of Education, McNally (1940), believed "It is astonishing that educationalists have overlooked this medium of educational development for so long" (p. 10).

Schools that offered the technical option, Group C, enrolments for these non-departmental subjects for 1939-40 were:

Mechanical Drawing 1 - 140
General Shop 1 - 988
General Shop 2 - 98
Arts and Crafts 1 - 37
Arts and Crafts 2 - 17
Arts and Crafts 3 - 2
Automotives 1 - 149
Automotives 2 - 73
Automotives 3 - 41
Electricity 1 - 171
Electricity 2 - 94
Electricity 3 - 26
Metal 1 - 142
Metal 2 - 69
Metal 3 - 13
Printing 1 - 37
Printing 2 - 10
Woodwork 1 - 126
Woodwork 2 - 68
Woodwork 3 - 13

(Bellamy, 1940, p. 45)

There were a number of school divisions which took advantage of the special grants that were payable when two or more districts entered into an agreement for the purpose of providing instruction in shop courses, home economics, commercial subjects, music or art. These grants were paid to the districts for travelling teachers who spent their entire time in teaching these special subjects. (Bellamy, 1940, p. 61)

There was a steady increase in the number of schools offering shop courses and there was corresponding improvement in the accommodation and equipment for these practical subjects. The equipment for General Shop had a close correlation to the type of building in which that equipment was housed. During 1942 there were 169 shops equipped and in use throughout the province. There were several centres that were operated by teachers who travelled from centre to centre, circuits, according to a fixed schedule. (Carpenter, 1942, p. 73) The war years were difficult for practical subjects because: the war drew heavily upon teachers of general shop; there were difficulties in securing tools and equipment; hardwoods and plywood were almost off the market; metal was very scarce; and power equipment was practically unavailable for purchase.

Group C course options, Technical, were offered in three centres only, Calgary, Edmonton, and Lethbridge. Group D options, General, included Mechanical Drawing which was offered in 21 non-urban high schools; General Shop I offered in 82 of these schools; and General Shop II in 56 non-urban high schools. The following chart shows enrolment for 67 city and town schools which offered Group C - Technical Electives.

Technical Elective	Enrolment	Grade
Woodwork 1	122	X, XI, XII
Woodwork 2	80	XI, XII
Woodwork 3	10	XII
Metalwork 1	193	X, XI, XII
Metalwork 2	95	XI, XII
Metalwork 3	19	XII
Electricity 1	205	X, XI, XII
Electricity 2	107	XI, XII
Electricity 3	26	XII
Automotives 1	174	X, XI, XII
Automotives 2	106	XI, XII
Automotives 3	30	XII
Printing 1	31	X, XI, XII
Printing 2	20	XI, XII
Arts & Crafts 1	38	X, XI, XII
Arts & Crafts 2	12	XI, XII
Arts & Crafts 3	5	XII

Data taken from: Annual Report, 1942, p. 95

The total enrolment for all technical electives for Grades X, XI, and XII was 1273 students. The total enrolment for Group D, General, for these three grades was 617 - Mechanical Drawing, 37; General Shop I, 453; and General Shop II, 127. In Grade VII, VIII and IX, there were 5,739 boys and girls enrolled in General Shop. To clarify the confusion that began to evolve among both professional and laymen as to what was a technical elective, vocational education or industrial arts, Dr. Carpenter said:

> That one must not confuse technical education (technical electives) with vocational education. The Industrial Arts courses are not carried primarily as vocational training: they are essentially exploratory, and educative in the full sense of providing diversified experience that will develop understandings, appreciations and desirable attitudes. (p. 16)

A meeting of The University Survey Committee was held on November 18, 1943 at Edmonton in the Committee Room of the Legislative Chambers to discuss the teacher training program for general shop teachers. As a result of

that meeting it was recommended that the teacher training program of the normal school, of the Provincial Institute of Technology and Art, and of the Faculty of Education at the University be unified and integrated under the Faculty of Education. This unification and integration was to take place as soon as the necessary building accommodation was available.

Notwithstanding the difficulties that "shop teachers" faced during the war years, they carried on by using the tools and equipment in their shops, and by using scrap materials such as apple boxes and tin cans to construct projects. In spite of this, during 1943 the Edmonton Public School Board made the decision to close the Technical High School.

In January 1944, Dr. W.G. Carpenter retired as Director of Technical Education, a position which he held for approximately twenty years. For a considerable part of that time, Dr. Carpenter also served as principal of the Provincial Institute of Technology and Art. Mr. A.P. Tingley was appointed Supervisor of General Shop for the province. According to Smith (1973), Tingley received some of his training at Fort Collins, Colorado. Another appointment that took place that year was the appointment of J.H. Ross as Regional Director, Canadian Vocational Training.

During the 1944-45 school year, the implementation of a four- year high school program was introduced with the compulsory core subjects: English, Social Studies, Health and Physical Education, Mathematics, and Science. (Newland, 1944, p. 15) Because of the difficulties created by wartime conditions, phasing-in of this program for small schools was temporarily suspended. There were 119 shops in operation during the year with 117 of these offering General Shop. Of the 119 shops three offered Group C options - Technical Electives. Forty-five centres were on circuits, cooperative school boards that employed travelling instructors to teach a practical subject. Although this was not an ideal arrangement, it did permit a large number of students who otherwise would not have that privilege to participate in the program. New shops were opened in seven centres, while five that had been closed the previous year were reopened. (Tingley, 1944, p. 59) Fifteen centres throughout the province were unable to offer instruction in General Shop because of two major factors: (1) teachers who previously taught General Shop transferred to other schools; and (2) there was a shortage of qualified teachers for this subject area. (Tingley, p. 59) Ninety-five teachers were offering

instruction in the various centres throughout the province. Of that number, 52 were full time and 42 were teaching part time.

The number of centres where special departments had been equipped for classes in General Shop showed a marked increase in 1945. As of December 31st of that year, there were 162 shops in operation in 97 centres. Of these 162 shops, 58 were on circuits served by travelling instructors. (Tingley, 1945, p. 55) Included in the census of 97 centres were 15 new centres that had opened shops during the year and 6 centres that were reopened that had not been in operation the previous year. There were approximately 8000 students registered in General Shop and Group C options (Technical Electives). One of the most progressive educational developments that took place in 1945 was the establishment of a teacher preparation program in the Faculty of Education, University of Alberta, for industrial arts teachers. This program would terminate in a baccalaureate for the student. Tingley was of the opinion that "the impact of this development will inevitably be reflected in the type of instructional service by those who participate in the program" (p. 54).

In the fall of 1945 there were 19 students, all of them ex-service personnel, registered in the industrial arts teacher education program that was a cooperative venture between the Provincial Institute of Technology and Art and the Calgary branch of the Faculty of Education of the University of Alberta. The professional coursework of this program was the responsibility of the University, while the practical and theoretical instruction in shop subjects was the responsibility of the institute. This program remained in place until 1963 when it was transferred to the Edmonton campus of the University of Alberta.

INDUSTRIAL ARTS

The termination of the Second World War was a blessing in disguise for "practical subjects" because school boards were able to purchase equipment through Surplus War Assets at a fraction of original costs. Many school boards in the province took advantage of this opportunity.

New course outlines were prepared for the Technical Elective Courses, courses in Farm and Home Mechanics and the Drafting course. The following procedure was used to revise these courses: (1) all the shop instructors in the province were requested to submit suggestions for course improvement and (2) the supervisor of industrial arts held a number of meetings with shop teachers in Calgary and Edmonton.

Personnel of the Department of Education in 1946 began to give consideration to the advisability of changing the name "intermediate", for Grades VII, VIII, and IX to "Junior High". It was evident that what was happening in educational circles in the United States was influencing the thinking of educators in Alberta. According to the 1946 Annual Report:

> The chief reason for thinking of this change is the fact that the term "intermediate" is used in many parts of the United States to designate Grades IV, V, VI whereas in our province, it is used for Grades VII, VIII and IX. We find, therefore, that the professional literature emanating from across the border is confusing to use the word "intermediate". (p. 60)

During this year the name "industrial arts" was substituted for the term "general shop". This name change was instituted to designate the technical subjects taught in the intermediate school program.

With the return to peace time conditions there was a steady increase in the number of centres offering industrial arts or technical electives. This expansion was also delayed however, because of the shortage of building materials caused by the war and the high costs of construction. Despite these difficulties, some school boards did make improvements to their facilities where these practical courses were taught. To compound these problems, a number of teachers left the profession either to engage in business for themselves or to accept more remunerative employment in industry. There were 75 teachers employed, 59 full-time and 15 part-time.

Although new shops continued to open or shops that were closed reopened instruction in shop courses was discontinued in 14 centres because of the following two reasons "the transfer of teachers, who had been offering this instruction, to other schools and the impossibility of securing qualified instructors to replace them" (Tingley, 1946, p. 93).

Red Deer was the first rural area to open a composite high. This school was opened on September 1947, and it offered the usual academic courses as well as Home Economics, Agriculture, Electricity, Mechanics, Woodworking and other practical subjects. (Swift, 1947, p. 10) This school was housed in a building that was formerly part of the Army establishment and much of the equipment was obtained through the War Assets Corporation and from the Canadian Vocational Training Schools.

The larger population centres expanded their educational offerings in technical electives with instruction in unit shops under the composite high school

setup. To staff these centres, provision was made at the Calgary branch of the Faculty of Education and the Institute to prepare these specialists. Extensive building plans for shop facilities that were made by Lethbridge, Calgary and Edmonton were delayed because of increased building costs and the lack of certain materials. Tingley, 1947, was less than satisfied with the basement location of facilities for practical subjects. On this issue he wrote:

> Shop accommodation in basement rooms restricted in area, poorly ventilated and with inadequate lighting is still too common. It should be accepted that if these programmes in the practical phase of education are to receive a fair break that adequate accommodation of an attractive nature must be provided. (p. 12)

Ninety-two practical subject teachers were employed, 71 full-time and 21 part-time to teach in 131 shops that were in operation at 103 centres throughout the province. Seventy-one of these shops were on circuits served by travelling teachers. Although nine new shops were opened in 1947, seven centres discontinued instruction in shop activities because teachers were either transferred to other schools or it was impossible to secure qualified instructors to replace those who were transferred.

In the Annual Report for 1948, it was reported that "Progress is being continued with the new Victoria Composite High School building at Edmonton" (Watkin, 1948, p. 42). The Supervisor of Industrial Arts felt that the location of industrial arts facilities in the basement rooms of schools was detrimental to the program because poor light and ventilation in these rooms hampered the proper offering of the program and definite accident hazards were present. (Tingley, 1948, p. 73)

Two significant developments occurred in 1948 that had an impact on teachers of industrial arts or technical electives. For the first time in the history of the province the teachers of industrial arts or technical electives held a conference in Calgary on May 21 and 22, 1948. The second significant development was the completion of an arrangement with the Apprenticeship Board whereby students who successfully completed courses in technical electives, taught in unit shop, under approved instructors, would, if they entered apprenticeship training, receive credit for their instruction. This procedure would shorten the time required for their apprenticeship training. Negotiations continued with the Provincial Apprenticeship Board through 1949 and in 1950 the

board provided for the articulation of high school unit shop courses with the apprenticeship system on the following basis:

> (a) A student who has successfully completed at an approved Unit Shop under a journeyman instructor, Woodwork 1, 2, and 3, or Electricity 1, 2, and 3, or Automotives 1, 2, and 3, may sit for an examination in any of these subjects set by the Advisory Committee of the Apprenticeship Board and if successful will be granted a one year credit of apprenticeship training, thereby allowing the student to start his second year of apprenticeship on leaving high school.
>
> (b) A student who has successfully completed at an approved Unit Shop, not under a journeyman instructor but under one who has had considerable training and experience in the trade to the satisfaction of the Apprenticeship Board, Woodwork 1, 2, and 3, or Electricity 1, 2, and 3, or Automotives 1, 2, and 3, may begin his apprenticeship training and if after three months or training on the job his work reaches a satisfactory standard he may be allowed to sit for an examination in his trade set by the Advisory Committee of the Apprenticeship Board and if successful he may then proceed to the second year of his apprenticeship training. (Frame, 1950, p. 76)

The Director of the Curriculum Branch, M.L. Watts (1949), indicated in his report that "the addition of a third four-credit course to the existing four-credit courses in Technical Electives was authorized" (p. 39). These courses were designated as "a", "b", and "c" programs in woodwork, electricity, and automotives and were placed in the schools on an experimental basis. Tingley (1949), was of the opinion that the technical elective program would have to be revised in order to:

> (a) Bring them into line with modern developments in trade and industry;
> (b) Enable students who have taken three years training in woodwork, electricity, or automotives in our composite high schools to attain credit towards their apprenticeship training to the extent of one year. (p. 54)

There were three classifications of high schools in Alberta in 1950. The small high school of one or two rooms served a local population and limited its instructional program to the academic courses only. Central high schools served a number of towns or villages from many districts. In these schools, academic courses were supplemented with limited offerings in Home Economics, Industrial Arts and Commercial Subjects. The teaching force in these schools was between

five to ten teachers with a student enrollment between 100 to 200 students. The third class of high school was the composite high school which offered in addition to academic subjects, General Electives, Commercial Courses, Industrial Arts, Home Economics, and Practical Agriculture. These schools were normally staffed with 20 or more teachers to serve a student population between 400 to 500 students. (Frame, 1950, p. 26)

A proposal was submitted to the General Curriculum Committee urging that the Institute of Technology and Art give adequate recognition and credit for work taken in the technical electives of the high school. The Committee gave this proposal its strongest support, and arrangements were made with the Institute whereby over a two-year trial period students would be admitted to the second year of corresponding courses offered at the Institute providing the high school student obtained "H" or "A" standing in any one of Woodwork 3, Metalwork 3, Electricity 3, Automotives 3, or Fabric and Dress 3. This arrangement did not help to clarify the opinions of the public, the press and many educators as well as parents that industrial arts was part of general education and not vocational education. It is possible that members of these stake holder groups considered industrial arts as vocational education because the student could apply for, and receive advanced standing in either the apprenticeship training program or in a corresponding program at the Institute. The objectives for industrial arts were stated in general terms but this did not stop the criticism that the program received during the decade from 1950 to 1960.

The program continued to grow in 1950 when there were 128 teachers of industrial arts and technical electives in 116 centres ranging in location from Cardston to Grande Prairie. The Camrose School Division set precedence in the province when it established strategic centres in the division with well equipped shops and home economics departments. Students from surrounding schools were vanned to these centres. Although there were capital and operating costs of vans these costs according to Byron were partially offset

> By elimination of instructors' travelling expenses, and the costs of establishing and maintaining several shops on a circuit. Other factors include the reluctance of teachers to accept circuit positions, and the availability of electric power at the larger centres. The net effect has been the extension of shop facilities to smaller schools, and the provision of better quarters for Industrial Arts courses and of better equipment that was ever before thought possible. (Byron, 1950, p. 66)

A philosophical shift began to develop when Robert Byron became Supervisor of Industrial Arts and Tingley retired in 1950. Byron was aware that industrial arts courses had an exploratory value for the student and that there was need for experiences with other materials and processes than those associated with woodwork. In the 1950 Annual Report, Byron stated:

> There is increasing realization of the exploratory value of Industrial Arts courses and of the need for experiences in phases other than Woodwork, which has been the traditional and popular medium. Electricity, Metalwork, Concrete Work, and crafts including Leather work, Plastics, and Bookbinding are being treated with increasing success. A major purpose of such courses is to familiarize pupils with raw materials, products and processes of industry, and it would be unfortunate to limit such experience to Woodwork. (p. 66)

Byron felt that shop subjects in the rural areas of the province should probably be related to the agricultural industry, i.e., the courses in farm and home mechanics. He questioned the trend of extending eight credit technical electives which were trade preparatory courses to these areas. "Pupils desiring trades training are not seriously handicapped when technical electives are not offered, since training is available to them through the apprentice training program" (Byron, p. 66).

In addition to the city high schools, there were 33 high schools that offered classes in Woodwork, Metalwork, Electricity, Arts and Crafts, Homemaking, Fabrics and Dress, Animal Science, Plant Science, and Printing. (Annual Report, 1951, pp. 47-48) In some school jurisdictions, there was marked improvement in both the accommodation and the equipment for the industrial arts, technical electives, and other practical subjects when new buildings were erected or when additions were made to existing structures. In these centres, industrial arts and the other practical subjects came out of the basement and into the sunlight.

During the year, the development of central shops to which students in nearby schools were vanned was a growing trend with 21 schools being served in this manner. In addition to vanning students, there were more than fifty percent of the existing rural shops that were served by travelling teachers on circuits.

Byron considered industrial arts to have guidance value to the students "who need to explore their interests and aptitudes as a basis for sensible decisions regarding a choice of life work" (p. 56). He encouraged both school

boards and teachers to provide students with experiences in Electricity and Radio, Metalwork, Crafts, and Automotives because he felt that too much emphasis was being placed on woodwork.

Approximately 75 per cent of the teachers who taught either industrial arts or technical electives attended a two-day conference that was held at the composite high school in Red Deer. One of the major decisions resulting from the conference was that it should be either an annual or biennial event. To keep teachers informed, three newsletters were sent from the Department of Education to all industrial arts teachers.

On January 1, 1952, Byron was granted a year's leave of absence to serve in Greece as a technical education consultant with the International Labor Office. Mr. J.P. Mitchell, who was an industrial arts teacher at the University School, was appointed as Supervisor of Industrial Arts. During 1952, the Advisory Committee on Industrial Arts and Technical Education made the recommendation "that the courses on the Grade X level be revised to conform with the philosophy of general education in this grade" (Mitchell, 1952, p. 54). As a result of that recommendation, the following courses were rewritten on a unit basis with a change in credit value:

> Woodwork 1 (8 credits) and Woodwork 1a (4 or 5 credits) to Woodwork 10 (4 or 5 credits); Metalwork 1 (8 credits) and Metalwork 1a (4 or 5 credits) to Metalwork 10 (4 or 5 credits); Electricity 1 (8 credits) and Electricity 1a (4 or 5 credits) to Electricity 10 (4 or 5 credits); Automotives 1 (8 credits) and Automotives 1a (4 or 5 credits) to Automotives 10 (4 or 5 credits). (Mitchell, p. 54)

These changes were made to facilitate the achievement of the objectives and to facilitate programing. The Curriculum Branch of the Department of Education reprinted the 1949 Junior High School Industrial Arts Curriculum Guide and the following interim curriculum guides: Automotives 10; Electricity 10; Metalwork 10; and Woodwork 10. In 1952, there were 154 school shops; with 29 circuits with 77 shops on circuits. To provide instruction in these facilities, there were 138 teachers. In the province there were 21 schools that vanned their students to a central shop. (Mitchell, p. 64)

The exploratory courses listed in the 1953 edition of the Junior High School Program were: Art, Dramatics, Music, Home Economics Industrial Arts, Community Economics, Oral French, and Typewriting. Considerable attention

was given to the Grade X shop program because this was the first year that the interim curriculum guides were used. Curriculum guides for the other high school industrial arts courses were also being revised. The number of school shops showed an increase of 6 over the previous year to 168. The number of circuits decreased by 2, from 29 to 27, while the number of shops on circuits also decreased from 77 to 69. However, there was an increase in the number of industrial arts teachers to 144 from 138.

C.B. Johnson (1954), in the Report of Inspectors of Schools which appeared in the Annual Report for that year, gave the following census of students who were enrolled in technical electives throughout the province.

> Through the province over 6,200 high school students are receiving some instruction in industrial education. [This is the first time that the term "industrial education" appears in an official publication of the Department of Education.] Slightly over one-half of these (3,259) are in city high schools with the remainder (2,977) attending the comprehensive type of school found in the smaller centres outside of the cities. There are 126 high schools offering courses in shopwork, 118 of these being outside the cities. In the cities, 42 instructors give instruction in this work, while 76 instructors are employed in the other centres. Of this latter group, 27 operate two or more centres.
>
> . . . . . .
>
> There has been a slight increase in the number of students taking 4 or 5 credit courses over the previous year (5,231 as compared to 5,031); and a corresponding decrease in the number enrolled in senior courses (1,005 as compared to 1,230). This decrease is attributed to the fact that an increasing number of students are completing high school in three years. (p. 43)

The result of selected groups of instructors who had worked on curriculum revisions were interim curriculum guides, except for the General Mechanics series. These new courses were made available in the following curriculum guides:

> Industrial Arts Grades VII, VIII, and IX
> Woodwork 10, 21, 20, 30
> Electricity 10, 21, 20, 30
> Metalwork 10, 21, 20, 30
> Automotives 10, 21, 20, 30
> Arts and Crafts 10, 20, 30
> Printing 10, 20
> Drafting 10, 20
> (Mitchell, 1954, p. 46)

During 1953-54 an additional 21 centres throughout the province opened industrial arts facilities. Below is a census on the numbers of school shops and industrial arts teachers employed during this school year.

Number of school shops	196
Number of circuits	27
Number of shops on circuits	73
Number of instructors	163

(Mitchell, p. 47)

The Department of Education through the Minister of Education began to issue a special certificate to teachers who held a general certificate. Special certificates were granted in: Art, Music, Dramatics, Guidance, Administration, Bookkeeping, Typewriting, Stenography, Commercial Subjects, Industrial Arts, Unit Shop, Home Economics, Kindergarten-Primary, and Physical Education. To qualify for these special certificates, the teacher had to complete prescribed courses in the Faculty of Education, University of Alberta, or in other instititutions recognized by the Minister of Education. (Cameron, 1954, p. 20)

The student enrolment in high school industrial arts courses, in 1955, increased approximately 13 per cent over the previous year, totalling 7,043 students. (Chalmers, 1955, p. 37) During the year, new course outlines were prepared for the General Mechanics series of courses - General Mechanics 15, 16, and 17. These particular courses were designed for the rural general shop where one teacher was present to teach the course. These courses were designed to provide and to encourage shop experience in a number of industrial areas, usually wood, metal, electricity and automotives, rather than in woodwork only.

The greatest single problem that faced school administrators who wanted to employ an industrial arts teachers was the inadequate supply of trained teachers in this subject area. Because of the unavailability of qualified teachers four shops were closed, a few school districts reduced their programs and some school boards deferred the inauguration of shop courses. An analysis of the census of school shops and teachers for 1954-55, shows that there was an increase in the number of shops from 196 to 218. There was a slight decrease in the number of circuits to 25 from 27, as well as a decrease in the number of shops on circuits to 66 from 73. The number of industrial arts teachers showed an increase of six from 163 to 177. (Mitchell, 1955, p. 44)

In reporting on the "effectiveness of instruction in junior high schools", in the Annual Report for 1956, Berry wrote:

> Industrial arts and Home Economics are offered as electives to a large number of Grade IX classes, to a smaller number of Grade VIII classes, and only to a few Grade VII groups. These courses proved popular with both boys and girls and parents, and will probably be offered more extensively as more qualified teachers become available. (p. 30)

Berry observed that in many areas of the province where smaller high schools existed pupils were less enthusiastic about these courses if they had the opportunity to take them in junior high school. A similar situation prevailed at the senior high school level because a large number of high schools offered industrial arts courses at the Grade X level, i.e., Woodwork 10, General Mechanics 15 and 16, a much smaller number teaching the Grade XI electives, and none giving the Grade XII courses. (Berry, p. 36)

Industrial Arts continued its rate of expansion during the year with an increase of 21 per cent in the number of students taking high school shop courses and an increase of 16 per cent taking junior high school courses where compared with the enrolments for 1954-55. Mitchell (1956) reported "thirty more instructors are now engaged in this special curriculum area" (p. 43). This brought to 207 the number of teachers who were employed to teach industrial arts. In the province there were 249 school shops where industrial arts courses were taught. A critical need for adequately qualified industrial arts teachers was the major reason for curtailing the program in many centres of the province. In some areas of the province, the smaller high schools merged with a nearby high school to help solve their teacher shortage.

In 1957, the principals of the eight composite high schools in the five city systems and the supervisory personnel of these system began to study the vocational effectiveness of the technical electives. The teacher shortage remained critical during the 1956-57 school year and its effect was that a number of school administrators deferred plans for implementing these courses. Another contributing factor to this deferment was the rising cost of both buildings and equipment. The cities of Calgary and Edmonton because of the expansion and development of their industrial arts programs appointed full-time supervisors for this subject area. Mitchell felt that the courses in industrial education were becoming quite generally accepted as an integral part of general eudcation. In that regard, efforts were being made throughout the province to keep the courses that were offered meaningful and industrially realistic.

Throughout the province, in 1958, there were approximately 8,800 pupils enrolled in high school shop courses which were taught in 155 high schools. In centres outside of the cities, the courses were usually taught in one-instructor general shops. In that learning environment, it was common to provide practical experiences in woodwork metalwork, and electricity. There was a trend to

lessen the time devoted to woodwork so that experiences with other materials, tools and processes could be taught. There was a continuing need for additional well-qualified and competent industrial arts teachers. The results of the research project to evaluate the vocational effectiveness of the technical elective courses were released by the Conference of Alberta Composite High School Principals. It is evident from what Mitchell (1958) wrote that he was satisfied with these results which:

> Indicate that half of the senior shop students may be taking courses for vocational purposes and of these about one-half likely finding vocational value in them. Since these courses also contribute to the general education program of high school students, this survey is an encouraging indication of the effectiveness of the senior high school technical electives. (p. 47)

Unlike Dr. Carpenter, Mitchell felt that one of the functions of the senior high school shop courses was to contribute toward the achievement of the occupational preparation objective of the secondary school. More specifically, Mitchell stated "the Grade VI and VII shop courses offered in the unit shops are intended in part, to serve this function" (p. 47).

Mitchell made his last contribution to the Annual Report in 1960 when he was appointed principal of the prospective Vocational and Technical School that was being planned to be constructed in Edmonton. When that school was opened in 1963 it was called the Northern Alberta Institute of Technology. In his final report, he described the industrial arts program that was offered in the junior and senior high schools in this way:

> The industrial arts courses are elective courses offered at both Junior and Senior High School levels. In the Junior High School, a major function of the courses is exploratory so that while the student is familiarizing himself with some of the tools, materials, and processes of industry he is being provided with an opportunity to determine and develop his manipulative and creative interests, aptitudes, and abilities. These courses are offered in multi-purpose general shops where a variety of experiences in a number of industrial areas can be provided. In the Senior High School, there is increased concern for the realization of the pre-vocational and occupational preparation objectives. Most of the High School Courses are offered in composite schools where unit type shops facilitate a concentration of study and activity in broad industrial areas: general woodwork, general metalwork, electricity, automotives and less frequently, drafting, craftwork and printing. (Mitchell, 1960, p. 68)

It should be evident from the above quotation that the industrial arts program at the junior high school level was mainly exploratory and was made available in multi-purpose general shops where a variety of activities were being taught concurrently. Conversely, the senior high school industrial arts program had as its major objective the pre-vocational or occupational preparation of the learner. The courses at this level of education were taught in unit shops.

In his Annual Report, Mitchell stressed the fact that one of his major areas of concern was the inadequate supply of suitably qualified teachers to staff industrial arts shops.

Early in 1961, the provincial government signed the Technical and Vocational Training Assistance Agreement with the federal government. Although this Agreement had a tremendous impact on vocational educaton and post-secondary technical education, it did not affect industrial arts. Section 7. Capital Expenditures Section (5) specifically states:

> No part of the Federal Government funds available for capital expenditures under this Agreement may be used for any of the following purposes.
>
> . . . . . .
>
> (e) General shops of facilities used for industrial arts classes:

During this year, J.P. Mitchell left the Department of Education to take up the principalship of the new Institute of Technology. He was replaced by R.C. Cunningham, who had been an instructor at the Institute of Technology in Calgary, as well as teaching pre-service industrial arts teachers at the Calgary branch of the University of Alberta.

The University of Alberta, Calgary, moved from the building and campus jointly occupied with the Southern Alberta Institute of Technology, to its new campus in North-West Calgary. This move terminated an association of thirty-eight years between the University or its predecessor, the Calgary Normal School, and the Institute. (Swift, 1961, p. 8) The Specialist Council for Industrial Arts was formed under the sponsorship of the Alberta Teachers' Association. The purpose of this Council was the improvement of education in Alberta. The first meeting of the Council was held in Edmonton during the Easter holiday. It was expected that this would be an annual conference and that the five geographical zones of the Department of Education would become Regional Councils under the Specialist Council.

Prior to this time, an under-tow began to develop which necessitated a change in the province's high school industrial arts program. As early as 1950, the Conference of Alberta Composite High School Principals discussed the role of technical elective courses in the composite high school. The direct result of that discussion was a province-wide survey to evaluate the extent to which technical elective courses were being used vocationally. Specialists in industrial arts considered technical electives to be an integral part of that subject area. It is evident that some school administrators considered technical electives to be either vocational education per se or psuedo-vocational education. The survey that was conducted by the conference of principals was not conducted to determine if these courses met industrial arts objectives but to determine their vocational value. This was an indication that there was some confusion concerning the objectives of these courses.

The most vociferous critic of the high school technical elective program was the Chairman of the Calgary Public School Board, Harvey Bliss. In his criticism of this program, Bliss took the position that the program should be revised considerably or dropped by the Department of Education. In the April 8th issue of The Calgary Herald (1961), he was quoted as saying:

> As the curriculum is laid out now, the course is not being used for the purpose for which it was intended. . . . and it does not seem to lead anywhere.
>
> The students don't get any credit on the high school shop courses when they enter the Southern Alberta Institute of Technology and I don't think industry gives much recognition to them. (p. 21)

Many of the students taking these courses were students enrolled in the matriculation program of study. For some technical electives, prerequisites were matriculation subjects, and the academic ends of these courses were the same as that of matriculation subjects, which placed the average technical elective student at a disadvantage.

There were some members of the Edmonton Public School Board who considered these courses to be a waste of money.

With the availability of federal cost-shared conditional funds to support secondary school vocational education, discontinuance of technical electives became evident, and it would be necessary to revise and upgrade the curriculum that was in place. Thus the threat to industrial arts subsided and the attention of educators shifted to vocational education.

The perennial problem of the shortage of well-qualified teachers with respect to industrial arts continued to exist in 1961. Although a shortage did exist, Cunningham was encouraged by the number of students enrolled in the teacher education program of the Faculty of Education, when he reported "sixteen students were registered in the first year of the Bachelor of Education in industrial arts. . . . twenty in the second and eleven in the third" (1961, p. 53).

Statistics relating to school operation for the 1961-62 school year show there were 289 industrial arts shops in operation with a teaching complement of 261 industrial arts teachers. In addition, there were 21 circuits with a total of 50 shops on these circuits.

Dr. W.H. Swift, Deputy Minister of Education, reported in 1962 that arising from the T.V.T.A. Agreement the Division of Vocational Education was established within the Faculty of Education, Edmonton campus of the University of Alberta. Dr. H.R. Ziel was recruited to head this Division. Early in his tenure at the University, Ziel became very critical of the industrial arts program in the schools. He criticized this program because of its heavy emphasis on skill development and the limited number of areas that were used in these shops - woods, metal and drafting sometimes referred to as the Holy Three of industrial arts. This noted educator was of the opinion that industrial arts should be part of general education, taking its content from both the evolving technologies and the craft trades of industry. To Ziel, industrial arts should be highly exploratory in the junior high school grades and become more specific in the senior high school grades. The learning environment where these technologies and materials should be taught was in an environment organized as a multiple activity laboratory.

Although Dick Cunningham was Supervisor of Industrial Arts, he spent a great deal of his time in meetings with school boards discussing the terms of the TVTA and in planning shop layouts. Cunningham also had the responsibility of preparing three- year vocational educational programs for the following subject areas: automotives, electricity, food preparation, carpentry, machine shop, sheet metal, commercial art, and graphic arts.

Statistics from the Department of Education concerning the number of shops unable to open due to the lack of a teacher was not an accurate number. Many of these shops were staffed with teachers who had very few qualifications for the job. (Cunningham, 1962, p. 44)

As in previous years, new facilities were either opened, re-opened or closed. Shops were closed for lack of a qualified teacher, on decision of the school board, or consolidation of schools. Statistics relating to school operations for the 1961-62 school year show 311 school shops, were in operation. The number of circuits were reduced to 14 and correspondingly the number of shops on these circuits were reduced to 34. In the 311 school shops there was a teaching force of 287 industrial arts teachers who taught a total of 30,488 junior and senior high school students.

M.R. McDougall in October, 1962, was appointed Acting Supervisor of Industrial Arts to replace Dick Cunningham who was granted a leave of absence from his supervisory position to devote full time to designing vocational education diploma programs. Because of the introduction of vocational education in the schools and its relationship to technical electives, McDougall thought that there should be an early revision of the industrial arts curriculum guides. During his supervisory visits to industrial arts teachers throughout the province, McDougall observed that several of the teachers visited did not offer what he considered to be a challenging program. "This could be attributed to lack of training or equipment, lack of insight to interpret curriculum guides, or lack of adequate supervision" (McDougall, 1963, p. 38). The larger population centres continued to open new facilities. The small rural area either opened new shops or re-opened a previously closed shop because a qualified teacher was employed.

In the province, there were 288 industrial arts teachers employed to teach in 306 school shops. These 306 teachers taught a total of 30,128 students enrolled in Grades VII to XII as well as students in special classes and those students who were taking a technical elective for 4-5 credits or 8 credits.

In 1963, the Division of Vocational Education of the Faculty of Education became the Department of Industrial and Vocational Education with responsibility for the pre-service preparation of both industrial arts and vocational education teachers. The industrial arts program proposed by Ziel became the official industrial arts teacher preparation program of the Faculty of Education. This program was designed to interpret the tools, machines and processes of the manufacturing industries and the technologies found in a productive society. The content for these courses was to be taught in a multiple-activity laboratory.

Another significant personnel change took place in the Department of Education in September 1963 when J.D. Harder was appointed Provincial Supervisor of Industrial Arts to replace McDougall who resigned to accept a position with the Calgary Public School Board. R.H. Cunningham became high school inspector with special responsibilities for vocational education. It is interesting that like Mitchell, Cunningham and McDougall, Harder took his Masters' Degree from Oregon State University. Under Harder's leadership, both the industrial arts program and the vocational education program in the province were to undergo major modifications.

The Alberta Plan

Immediately after being appointed Supervisor of Industrial Arts, Harder elected to examine, first-hand, the industrial arts program in various centres in the province. Smith (1973) states: "this was done partly to determine if the charges made by Ziel that the Alberta program failed to meet the needs of Alberta students" (p. 87). From these school visits, Harder found that in the majority of the industrial arts shops the program consisted mainly of Woodwork, Drafting and Metalwork. One of the sites that he visited was the Hillcrest Junior High School in Jasper Place, a surburban area of Edmonton. This school was a pilot school where University personnel were teaching industrial arts to boys and girls in a multiple-activity laboratory.

Near the end of 1963, after he had assessed the industrial arts program and observed the pilot project at Hillcrest, Harder was prepared to recommend changes in the province's industrial arts program:

> One of the first changes that he advocated was a revision of the Junior High School Industrial Arts Curriculum Guide. In order to accomplish this, a curriculum committee recommended by the Secondary School Curriculum Committee was approved by M. Watts, Director of Curriculum for the province. This committee was assigned the task of revising the Junior High Curriculum Guide so that a multiple-activity program could be developed in the province. Smith (p. 88)

Harder (1964) reported that "the Junior High School Curriculum in Industrial Arts was revised" (p. 40). When that issues of the Newsletter was released by the Department of Education, major changes involved adding more plans for exploration and more standardization of content in each unit. The committee which prepared this curriculum recommended the reorganization of

shop layouts to facilitate a multiple-activity program within a single comprehensive laboratory. (p. 80) The multiple-activity program was accepted because Harder was of the opinion that it would move industrial arts teachers away from the unit shop programs that emphasized skill development with a limited number of materials. (Smith, 1973, p. 98)

In some school systems of the province, multiple-activity laboratories were opened and others were planned for in the near future. Areas in these laboratories included: ceramics, woods, metals, plastics, graphic arts, electricity-electronics, computers, power mechanics, and graphic communications. (Fadum, 1964, p. 37) For each unit of the revised program new equipment lists were prepared. Also prepared was a list of reference books and a new list of audio-visual aids for each unit of the junior high school program.

During the year of 1964, the Industrial Arts Specialist Council remained active in each region of the province. The Council held a three day seminar in the fall and a two-day conference in April. In discussing the contribution that the Council made Harder said "The Council has contributed much in providing a forum for the discussion of problems common to all instructors (teachers)" (p. 40).

Enrolment in industrial arts programs, junior high school, high school and special programs drastically dropped to 25,852 from 30,128 the previous year. This reduced enrolment was the result of industrial arts courses being replaced by vocational education courses at the high school level. These students were taught in 242 industrial arts shops or in 67 industrial arts shops that were combined with vocational education shops. In 1964, there were 228 industrial arts teachers in the province, as well as 67 industrial arts and vocational education teachers. (p. 41)

With the new multiple-activity program in place at the junior high school level, the Senior High School industrial arts program, which consisted of General Shop 1 and 2 and Technical Electives, was to undergo considerable revision. The genesis of the revision occurred at the Senior High Curriculum Committee meeting that was held on April 20 and 21, 1964.

> When O. Massing, who was the General Supervisor, High School Division for the Edmonton Public School Board, moved that " ... all industrial arts courses be revised and limited to not more than five credits per course, to be introduced in September 1965." This motion, seconded by J.D. Harder, was carried. (Smith, 1973, p. 100)

This motion created considerable discussion among the members of the Committee because they were concerned that the credits for high school industrial arts would be reduced from eight or ten credits to five. In speaking to the motion, Harder explained "that when industrial arts courses were offered for larger credits, they became vocational in nature and should be treated as such" (p. 100). The Director of Curriculum, M.L. Watts, pointed out "that industrial courses were not recognized by the Institutes of Technology or the Apprenticeship Board, regardless of the number of credits offered for them" (p. 100).

As a result of this motion, the Senior High Industrial Arts Advisory Sub-Committee held its first meeting on September 28, 1964, when the Committee discussed problems that were encountered in senior high school industrial arts. At a second meeting on November 31, the Committee agreed that unit shop courses should be retained for the larger centres. The committee recommended that in view of offering unit shop courses, General Mechanics course could be clustered. According to Smith (1973), the General Mechanics cluster was to have the following course titles "Woodwork, Metalwork, Electricity-Electronics, Plastics, Power Mechanics, Graphic Communications, Production Science, Research and Development, and Computers" (p. 102). The completion of four of these nine units would constitute a year's work. In these courses, the program was to consist of 4-5 credits in the major area.

At the February 8, 1965, meeting of this Committee, this plan was changed on a motion that was seconded and carried. This motion resulted in two high school industral arts programs being made available. One program was the cluster program, the clustering of common materials or technologies into one course, and the other was Industrial Arts General. The former courses were designated: Industrial Arts Electronics 10, 20, 30; Industrial Arts Materials 10, 20, 30; Industrial Arts Graphic Communications 10, 20, 30; and Industrial Arts Power Mechanics 10, 20, 30. These cluster courses had greater depth that the broader Industrial Arts General course. To illustrate: A student enrolled in Industrial Arts materials 10, 20, 30 would receive 5 credits for each course or 15 credits for all three courses. The student not wishing to have this depth of experience could study Industrial Arts General 10, 20, and 30 for three years. This student would study power, graphics, electricity and materials.

In September 1964, the revised interim junior high school industrial arts program was made available to all school jurisdictions in the province. In the Report of the Supervisor of Industrial Arts, Harder (1965) made the following comment:

> The complete senior high school program has been revised. All courses are of 4-5 credits per year in each area, with titles as follows:
> Industrial Arts, Electronics 10, 20, 30
> Industrial Arts, Materials 10, 20, 30
> Industrial Arts, Graphic Communications 10, 20, 30
> Industrial Arts, Power Mechanics 10, 20, 30
> Industrial Arts, General 10, 20, 30 (p. 44)

The expansion of the industrial arts program continued through 1964-65. The Report of the Supervisor of Industrial Arts showed increased enrolments over the previous year, 29,017 versus 25,852. This increased rate of enrolments was partly due to the increased student interest in the courses and their learning activities and to the expansion of the junior high school courses under the new program.

There were several school districts which found it necessary to expand their industrial arts facilities. There were 244 industrial arts laboratories, with a teaching force of 229 industrial arts teachers. The number of shops on circuits continued to decline, 25, as did the number of circuits, 10. Because of an inadequate supply of qualified teachers 26, industrial arts facilities were either closed or remained closed. (Harder, p. 45)

One of the major centres in the province that was reluctant to accept the multiple-activity organizational pattern for industrial arts was the Calgary Public School Board. The opposition came from T.M. Parry who was responsible for giving direction to the senior high school industrial arts program of the schools of that jurisdiction. This opposition continued to exist until the fall of 1967 when A.E. Morris replaced Parry as Supervisor of Industrial Arts.

A continuing shortage of qualified high school teachers was widely felt throughout the province in 1966. This shortage was reflected in several ways:

> Many extensions of teaching authority beyond certification were necessary; factors other than teaching competence and subject area speciality of a teacher; selectivity often being minimal; . . . some high schools were forced to reduce or severely alter their programs; teachers in the smaller and in more remote schools tended to leave at the end of one year. Furthermore, new recruits tended to be unfamiliar with the Alberta Program since the majority came from outside the province, many outside of Canada. (Kunelius, 1965, p. 25)

High school programs were diversified with the student having access to four patterns: Matriculation, Business Education, Academic-vocational, and General. In addition to the core courses, a student could elect to take industrial arts. Where facilities and good staff could be provided, the popularity of the new industrial arts program continued to grow. Twenty-two new multiple-activity laboratories were completed and put into operation. This brought to a total 284 industrial arts shops in the province, with a teaching force of 266 industrial arts teachers. Enrolments in both the junior high school and senior high school program continued to increase to a total of 31,882 from 29,017 the previous year.

Through the cooperation of the teachers, specialist councils, school boards, the university, and the Department of Education a number of in-service workshops were held. The purpose of these workshops was to upgrade the skills of the unit shop teachers so they could teach in a multiple-activity laboratory. In order to further upgrade these teachers, summer session courses in both EDIA 260 and 270 were offered by the Department of Industrial and Vocational Education of the University of Alberta.

Senior High School Curriculum Guides were modified with revision based on the experience gained from their use as interim publications the previous year. The Curriculum Branch released these high school curriculum guides for senior high school industrial arts in 1966.

9 Curriculum Guide for Industrial Arts Materials 10, 20, 30
10 Curriculum Guide for Industrial Arts General 10, 20, 30
11 Curriculum Guide for Industrial Arts Electronics 10, 20, 30
12 Industrial Arts Graphic Communications 10, 20, 30
13 Industrial Arts Power Mechanics 10, 20, 30
(Watts, 1966, p. 62)

Harder (1967) in the March issue of the Industrial Arts Newsletter announced that A.A. Day was appointed Assistant Supervisor of Industrial Arts. Like his predecessors, Day received a Master's Degree from Oregon State University. Industrial Arts teachers who wanted to secure an advanced degree had to attend an American university because the University of Alberta offered only the Bachelor of Education Degree. In that Newsletter, Harder took the opportunity to present a five-year review of the major changes that had occurred

in industrial arts since the multiple-activity concept was introduced in 1962. Among these were:

1. The multiple-activity concept of organization had been accepted.
2. Many new areas for exploration have been added and the old ones revised and this revision is continuing clearly.
3. The high school courses have been developed into two programs: the Industrial Arts General and the Industrial Arts Cluster series.
4. New equipment lists have been prepared in keeping with the requirements of the curriculum.
5. Increased laboratory areas have been approved.
6. Laboratory layouts and design are undergoing constant refinement.
7. Some textbooks have been approved atthe junior high school level.
8. Student work books or manuals are being developed in the major units of the junior high.
9. An Assistant Supervisor of Industrial Arts (Mr. A.A. Day) has been appointed.
10. Closer liaison has been established between the University and the Department of Education by having the two staffs meeting jointly each month. This means the staffs in industrial arts of the respective departments.
11. We have been active in helping school boards and teachers plan the transition from the old to the new program. This not only includes laboratory organization but working with the specialist council in implementing workshops and institutes to upgrade the teacher.

(Harder, 1967, pp. 2-3)

In spite of all efforts, inducements and campaigns on the part of superintendents to recruit staff, the supply of qualified teachers failed to meet the demand.

> Small high schools were unable to offer much more than those subjects leading to matriculation where large enrolments permitted additional courses were offered in home economics, industrial arts, fine arts, and business education. In contrast large high schools were able to offer a broad range of courses suited to students of varying abilities and aptitudes. (McCormick, 1967, p, 17)

Although the number of industrial arts teachers continued to increase, a shortage of teachers familiar with the new industrial arts program continued to persist.

There was some confusion among school superintendents in the province about where to place industrial arts in the high school program. This could be partly attributed to the fact that the introduction of vocational education forced

industrial arts to shift ground, because the high school program was largely restricted to Grade X. Many of the superintendents considered it to be an extension of the program in junior high school. Nevertheless, the new industrial arts program appeared to be much more satisfactory than the old program.

> The new program proved to be successful where well-qualified and competent instructors were in charge. In a number of city systems extensive planning has been done in preparing facilities and programs for the industrial arts "cluster" courses. (Korek, 1967, p. 35)

At the junior high school level, the students found the new program more stimulating and interesting because of its variety of materials and technologies. This program was better co-ordinated with the academic program and the industrial arts teachers thought that the instructional procedures were much superior to those used in the former program. (Korek, p. 33) In both Calgary and Edmonton, all boys in Grades VIII and IX were required to take industrial arts. Some of the unit shops continued to exist through the province.

The Junior High School Curriculum Committee met twice during 1967 to revise and develop content for the 1968 edition of the curriculum guide. During the year, three workbooks were written by Alberta teachers for use in the program. The workbooks that were approved by the Department of Education were:

> Graphic Arts Workbook by C.W. Hildebrandt
> Plastic Workbook by W.S. Rider
> Power Mechanics Workbook by M.B. Shalka
> (Harder, 1967, p. 43)

In all areas there was continued growth in industrial arts: number of laboratories, 293; number of teachers, 275; and number of students enroled, all grade levels, 33,091. During the year, there was a decrease in the number of circuits, 7, and in the number of laboratories on these circuits, 17. Of the 293 industrial arts facilities, 110 were junior high school laboratories, 29 senior high, and 154 were classified as junior-senior high school facilities.

Enrolment in industrial arts showed an increase in nearly all centres where these courses were offered. This increased growth was attributed to the new program "The Alberta Plan" that was introduced four years earlier. There were, however, 20 industrial arts laboratories that were closed or remained closed for lack of a competent industrial arts teacher. In 1968, there were throughout the province 307 operating industrial arts laboratories with 303 industrial arts

teachers. The number of circuits decreased to only 3 with 5 laboratories on these circuits. In Alberta during this year, there were 136 junior high school industrial arts laboratories; 42 senior high school facilities; and 129 junior-senior high school "shops". The majority of these facilities had been built or reconverted, as well as equipped, to teach the Alberta Plan. Many of the unit shop teachers attended either University classes, workshops or seminars to develop techniques and skills in the three learning domains needed to manage and teach in a multiple-activity laboratory.

The Junior High School Industrial Arts Subcommittee met twice during the year and produced a new junior high school interim curriculum guide which had a new format. Harder (1968) reported "this will be evaluated in twenty schools in 1968-69, prior to general introduction in the schools" (p. 45). Two student manuals, Metals - I.H. Frank and K.L. Williams and Graphic Communications - H.E. Reinders were approved by the Department of Education for use with the Junior High School program.

The Director of the Curriculum Branch reported "the variable credit value for the industrial arts couses was discontinued. Drafting 30 was deleted from the list of approved courses" (Harobi, 1968, p. 56).

During the 1968-69 school year, Harder was granted leave as Supervisor of Industrial Arts to complete work toward his doctorate at Wayne State University, Detroit, Michigan. When he returned to the Department of Education in September 1969, his appointment as Inspector of High Schools, Industrial Education was announced to the teachers in Volume VII, No. 1 of the Industrial Arts Newsletter. According to information provided in this of Department of Education publication:

> The term Industrial Education has been used to define the position of the High School Inspector. This is by design for the Department desired to see a more co-ordinated program of industrial arts and vocational education at the high school level. Industrial education is a general term and applies to both. Mr. Harder will have responsibilities in the two fields.
>
> It is hoped that the next few years will be exciting and rewarding as administrators and teachers become involved in developing a co-ordinated structure for industrial education. (p. 3)

In the summer of 1969, Cunningham was granted a leave-of-absence to work as an advisor with external aid in Thailand to establish composite high

schools in that third world nation. With Harder assuming the position of Inspector of High Schools, Industrial Education, Day became Supervisor of Industrial Arts.

The outcome of these assignments was that the stage was set for putting in place the industrial education concept in the province. How this was accomplished will be reported, in detail, in the next chapter.

SUMMARY

In a period of sixty-nine years, "industrial arts" in Alberta had evolved through manual training 1900-1926; technical education 1913-1936; technical electives 1936-1944; and industrial arts 1949-1969. This evolution did not cease in 1969 but continued under the concept and rubric of "Industrial Education". During its evolutionary period, industrial arts grew from one manual training teacher at the Calgary Normal School to 308 industrial arts teachers in 1968. Similarly there was an increase in the number of physical facilities where industrial arts was taught, from the initial manual training room in the basement of the Calgary Normal School to 307 operating industrial arts laboratories in 1968. Of these 307 laboratories, 136 were classified as junior high school industrial arts facilities; 42 senior high school; and 129 were categorized as combined junior-senior high school industrial arts laboratories.

The Edmonton Public School Board in 1912 was the first in the province to open a technical school and a year later appointed a Director of Technical Education. The time allotted to technical education was usually half a week per week. The aim of this program was to prepare students for gainful employment in some special vocation.

The first director of technical education in the Department of Education was appointed in 1914 and had responsibility for all practical subjects, manual training, both elementary and secondary, household training; art; music; physical training; and agriculture and gardening. Manual training was given half a day per week and was considered part of general education.

Efforts were made through legislation to provide students in rural areas with the same educational opportunities that were available in the city schools. The School Grants Act made it possible for two school boards to unite to employ

teachers of practical subjects who would travel between two or more schools in a district - circuits. At the height of this program in 1952, there were 77 circuits. By 1968 the number of circuits had decreased to 3 and there were only 5 shops on these circuits during that year.

Manual Training continued to make progress and the learning activities for this subject area were broadened to include metal and electricity in addition to wood. Manual training was made an optional subject for grade IX, and as a result enrolments increased at a tremendous rate. In 1921 manual training was introduced in grades VI and VII where electricity and sheetmetal were taught.

In 1926 manual training became Manual Arts I and II and were included as a course of study for secondary schools. Learning activities in Manual Arts I included: drafting; cabinetwork; wood carving; and carpentry. Manual Arts II offered drafting; forging; sheet metal; and machine shop.

Technical education began to expand in the province when Calgary opened a technical high school in September, 1929. When this school opened, the Board made a decision to provide for a two-year program of study and combine it with academic education. Because of this ripple effect and the growing demand for technical and pre-vocational education, the Director of Technical Education took the position that the Department of Education should give consideration to establishing a program for the training of teachers for this program. Before students were granted credits for these courses, both a practical and a written examination were administered. Each examination was three hours long and administered at the end of the term. The major purpose of these examinations was to make the value of training equal to the academic subjects. Examinations were held in the following subject areas:

Building Construction I	Food and Dietetics I
Cabinet Work I	Industrial Crafts I
Carpentry I	Metal 2
Drawing and Design 2	Metal 3
Electricity 2	Motor Mechanics 2
Electricity 3	Motor Mechanics 3

From 1912 until 1935, the structure of education in the province consisted of the elementary Grades I to VIII and the high school Grades IX to XII. That structure was changed in 1935 when the junior high school concept, called the intermediate school, was accepted by the Department of Education. This placed Grades VII to IX between the elementary Grades I to VI and the high school

Grades X to XII. This structure also brought in the credit base for courses with one credit equal to thirty-five minutes of instructional time per week. Technical courses like academic and commercial courses, were put on a basis of thirty-five credits per year.

General shop and industrial arts became exploratory courses. In the large population centres where general shop was made available, there was rapid growth for this subject. In the smaller centres, this option was excluded because of the cost of equipment; the lack of physical facilities where the course could be taught; and the lack of a teacher with the required qualifications. The latter was a perennial problem since manual training was first taught in 1906.

For those wanting to teach general shop a special certificate was required. In 1939, there were four groups of electives from which a student could choose. Group A electives were Academic; Group B, Commercial; Group C, Technical; and Group D, General. Technical electives included: automotives, woodwork, metalwork, electricity, printing, arts and crafts, fabrics and dress, and homemaking. The growth of "industrial arts" reached a plateau between 1939 and 1946, the pre- and post-war years of the Great War, because of the scarcity of materials used with practical subjects; the unavailability of hand tools and power tools and their high costs; the high costs of constructing shops; and the need for adequately prepared industrial arts teachers. Because of this lack of teachers, there were centres throughout the province that were closed.

In 1945, the teacher education program for industrial arts teachers was established at the Calgary campus of the University of Alberta. This program remained on that campus until 1963 when it was transferred to the Edmonton campus of the University of Alberta.

Arrangements were made between the Department of Education and the Apprenticeship Board for students to receive credit for their technical electives instruction providing it was taught in a unit shop under approved instructors.

A philosophical shift began to develop in the Department of Education when Byron became Supervisor of Industrial Arts in 1950. Byron was aware that industrial arts had exploratory value and that there was a need to include other experiences and materials other than woodwork. This shift continued under the leadership of Mitchell, Cunningham, Harder and Day. These Supervisors all received part of their education while at university in the United States. It is

possible that the exposure these individuals received in their classes may have had an influence on their perception concerning the organization for industrial arts.

The Inspector of Schools in his portion of the 1954 Annual Report used the term "industrial education" but neither described nor defined this term.

During the decade of the 50s and well into the 60s, industrial arts continued its rate of expansion. The rate of growth was reflected in both student enrolment and in the number of facilities where industrial arts was taught. Industrial arts, as an elective course at the junior high school level, was taught in a general shop and was considered to be an exploratory course. At the senior high school level, as a technical elective, the course was taught in a unit shop with objectives that were heavily pre-vocational or occupational oriented.

Two significant events occurred between 1962 and 1963 that influenced the direction that industrial arts would take in Alberta. The first of these events was the appointment of Dr. H.R. Ziel to chair the Division of Vocational Education of the Faculty of Education. Ziel was the innovator of the Alberta Plan which was based on materials and common technologies found in a productive society. His position was that the learning activities associated with these materials and technologies should be taught in a multiple-activity laboratory. The second event was the appointment of J.D. Harder as Supervisor of Industrial Arts who advocated that the Department of Education accept the multiple-activity organizational pattern as the learning environment for industrial arts. Harder supported this concept because he was of the opinion that it would move the industrial arts teachers away from the emphasis placed on skill development in unit shops with a limited number of materials. Prior to this year, the senior high school industrial arts program consisted of General Shop I and II, and Technical Electives.

This program for the junior high school was changed in 1964, with the revision of the junior high school curriculum in industrial arts. The senior high school program was revised in 1965 when two high school industrial arts programs became available. One was the cluster program which clustered the common materials and technologies into one course and the other was Industrial Arts General. The cluster course had greater depth than the broader Industrial Arts General course.

The Calgary Public School Board was one the school jurisdictions that served as a pocket of resistance to the Alberta Plan with its multiple-activity laboratory. This opposition continued to exist until 1967. Where there were facilities and good staff the Alberta Plan continued its growth. To upgrade unit shop teachers for the Plan, workshops were held and summer session courses were offered at the university. To provide educational software for the Plan some teachers began to prepare student manuals or workbooks that were approved by the Department of Education.

Revised senior high school curriculum guides for: Industrial Arts Materials 10, 20, 30; Industrial Arts General 10, 20, 30; Industrial Arts Electronics 10, 20, 30; Industrial Arts Graphic Communications 10, 20, 30; and Industrial Arts Power Mechanics 10, 20, 30 were published by the Curriculum Branch in 1966. Two years later this branch of the Department of Education published a Junior High School Interim Curriculum Guide.

Upon his return to the Department from educational leave, in September 1969, Harder was appointed Inspector of High Schools, Industrial Education.

CHAPTER IV

SYNTHESIZING VOCATIONAL EDUCATION AND INDUSTRIAL ARTS UNDER THE INDUSTRIAL EDUCATION CONCEPT

Introduction

The intent of the author for presenting previous two chapters was to provide the reader with background information on the evolution of the two complementary subject areas of vocational education and industrial arts. This evolutionary process was dynamic through continuous curriculum revision that reflected the educational thought that prevailed at the time these curriculum changes were initiated. Part of the evolutionary process continued in 1969 when it was advocated that vocational education and industrial arts be synthesized and placed under the industrial education concept.

The researcher presented a number of operational definitions for the term "industrial education" in the first chapter. Many of the authorities quoted agree that both vocational education and industrial arts are two of the major programs of study that they would include under this generic term. The reader may recall that for the purpose of this investigation, because of its provincial orientation, the researcher accepted the definition for industrial education found in the 1979 issue of the Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators. How the industrial education concept and definition evolved is the purpose of this chapter.

To illustrate that evolution this chapter is divided into the following sections: Beginning of the Transition; The Need for Reorganization; a Rationale for Industrial Education; Directions for Action; Implementing Industrial Education; Reactions of Those Interviewed and a Chapter Summary.

BEGINNING OF THE TRANSITION

Although the term industrial education was used by educators in the United States since the early 1900s, it first appeared in Alberta in the 1954 Annual Report of the Department of Education. Nine years later in September 1963, R. H. Cunningham, High School Inspector of Vocational Education distributed to the industrial arts and vocational education teachers in the province the first issue of the Industrial Education Newsletter. However, when the second newsletter was published in December of that year, the title was changed back to its original title, the Industrial Arts Newsletter.

One of the responsibilities that Harder assumed with his appointment as Supervisor of Industrial Arts with the Department of Education was to become editor of the Industrial Arts Newsletter. In the December 1963 issue of that publication, Harder wrote an article titled "Industrial Arts and Vocational Education". An inference could be drawn from what appeared in the article, which was that there was confusion among industrial arts and vocational education teachers as well as pupils, parents and members from the various stakeholder groups about the fundamental purposes and position of industrial arts when contrasted with vocational education. While these two subject areas have common characteristics to a point, they are two distinct and independent areas in education.

The purpose of Harder's article was to clarify the relationship between vocational education and industrial arts so that the distinction between these two subject areas could be discussed by teachers from these two subject areas with members of the various stakeholder groups. (p. 1)

In this article, Harder wrote that industrial education "is a term used to describe the two major areas, industrial arts and vocational education when taken together". (p. 1)

To show the distinction between industrial arts and vocational education the author continued the article by stating that industrial arts

> is concerned with providing experience for pupils which will broaden their background of knowledge in the technologies and occupational areas; to give them an insight into some of the problems of our industrial society. Industrial arts courses help students discover and develop their talents in the technical fields by experience type situations in which these interests can be exercised. These courses help students develop basic skills and knowledge to satisfy avocational, personal and recreational needs. (p. 1)

In describing the characteristics of vocational education, Harder wrote that the aim of vocational education "is to provide the pupil with a means of making a livelihood through vocational competence" (p. 2).

In describing educational conditions that were reported to the Department of Education by Superintendents of city schools and independent districts in the province, Fodum (1964), wrote in the Annual Report, "Industrial education continued its expansion during 1963-64 and many systems reported plans for further expansion in 1964-65" (p. 37). This expansion was attributed to the

following factors (1) the introduction of the multiple activity laboratory for industrial arts and (2) the increased attention given to the range of vocational education courses that were being made available at the high school level.

When the 1965 Annual Report was released, one of the topics that deserved attention was "industrial education", which emphasized the expansion of the vocational education program. Little was said about industrial arts. Also included in this Department of Education publication were reports by the High School Inspector of Vocational Education, R. H. Cunningham; the Supervisor of Industrial Arts J. D. Harder; and the Director of the Division of Vocational Education, J. P. Mitchell.

Succeeding reports, 1966-1968, followed the pattern for reporting that was established with the 1965 Annual Report. That is a report on "Industrial Education" consolidated by a High School Inspector as well as reports by the High School Inspector for Vocational Education; the Supervisor of Industrial Arts and the Director of Vocational Education.

The only deviation from this pattern was the fact that in the 1968 Annual Report the two terms "industrial arts" and "vocational education" are placed under the heading "industrial education." Although the term "industrial education" was used in offical publications of the Department of Education, newsletters and annual reports, it was never defined.

The reader of this report should be cognizant of the fact that Alberta continued to maintain the two stream program for practical subjects, that is, industrial arts and vocational education until the 1969-70 school year. In September of 1969 J. D. Harder returned to the Department of Education following educational leave and was appointed Inspector of High Schools, Industrial Education (Industrial Arts Newsletter, 1969, p. 3). In section II of that Newsletter, the following position change was announced, "Mr. J. D. Harder has returned from a year of educational leave to take the position of Inspector of High Schools, Industrial Education." (p. 3)

The editor of that Newsletter, A. A. Day, who was Acting Supervisor of Industrial Arts, provided this explanation for the term industrial education:

> you will note that the term industrial education has been used to define the position of the high school inspector. This is by design, for the Department desires to see a more coordinated program of industrial arts and vocational education at the high school level. Industrial education is a generic term and applies to both. Mr. Harder will have the responsibility in the two fields. (p. 3)

Appended to this newsletter was a memorandum to the teachers in the field of vocational education that was written by Harder. In that memorandum Harder (1969) wrote, "I expect the next few years to be exciting and rewarding as administrators and teachers become involved in developing a coordinated structure for industrial education". (no page number)

When the December 1969 issue of the Newsletter was distributed by the Department of Education the name was once again changed from the Industrial Arts Newsletter to the Industrial Education Newsletter. A change that was initiated by the Department of Education personnel without consulting the teachers of the two subject areas concerned.

The next few years, 1969-1972, were indeed years of turmoil and frustration for teachers of industrial arts and vocational education in the province. During this time these teachers saw the introduction of a new vocabulary they would have to learn in order to describe "industrial education". They saw a reorganization of the number of credits allowed for vocational education courses; and they saw the introduction of modules for the organization of course content.

THE NEED FOR REORGANIZATION

In the years following the signing of the Agreement, Alberta became a leader in secondary school vocational education because it developed a total vocational education program of study to meet the needs of the students. The Department of Education assumed a leadership role by taking the responsibility for designing curricula or approving locally developed curricula, planning facilities, preparing equipment lists and providing guidance to school board personnel throughout the province to implement this program of study.

One of the criteria for Program I, the Vocational High School Training Program, was time related. A student enrolled in a vocational education course was to spend at least one-half of the school day taking a technical, commercial or a vocational education course that would prepare the student with an occupational level of skill to enter the world of work. In order to fulfill this requirement, the Department of Education established the standard that for a student to be eligible for a vocational education diploma, that student should have 100 credits of which 35 credits were to be in vocational subjects Students in the academic stream were prevented from enrolling in "22" or "32" level courses

that were equated at either 15 or 20 credits and required one-half of the school day because of this standard. This trend became a real concern of Department of Education personnel because they saw an unnatural dichotomy developing that began to stigmatize the vocational education program as second rate.

Statistics collected by the High School Inspector of Vocational Education indicated there was a significant drop in the number of students who elected to take "22" and "32" level courses after successfully completing the "12" course. To illustrate the point, vocational education enrolments for all courses for the 1965-66 school year show that in Grade X, 5,417 students were enrolled; in Grade XI the enrolment decreased to 2,013; enrolment for "32" level courses offered in Grade XII was 909 students. (Cunningham, 1966, p. 35) The economic feasibility of retaining courses with low student enrolments was being questioned by educational administrators because of the associated costs. Taxpayers in the province also wanted greater accountability from these administrators as to how wisely their tax dollar was being spent.

An educational innovation in the United States that had an impact on vocational education in that country, between 1967 and 1971, was the clustering of occupations found in the Dictionary of Occupations Titles for the purpose of career education. In its publication Career Education (1971), the United States Department for Health, Education, and Welfare reported that it had placed over 30,000 occupations found in the Dictionary into the following clusters: Transportation; Health; Agri-Business and Natural Resources; Business and Office; Communications and Media; Consumer and Homemaking Education; Construction; Environment; Fine Arts and Humanities; Hospitality and Recreation; Manufacturing; Marine Science; Marketing and Distribution; Personal Services; and Public Service. (p. 9)

In 1965, at the time that the career education movement was at its zenith in the United States, Mr. J. D. Harder, Supervisor of Industrial Arts in Department of Education, was completing the requirements for a Doctoral Degree at Wayne State University, Detroit, Michigan. When he returned to the Department in September, 1969, he was appointed as Inspector of High Schools, Industrial Education.

Personnel from the Department of Education who were active in field operations became aware of the need for modifying the structure of vocational education. Betwen September and December of 1969, Harder met with

vocational education teachers throughout the province to discuss problems that pertained to vocational education. These meetings were held on either and individual or on a group basis. From these meetings Harder identified five major problems associated with vocational education that he reported in the December 1969 issue of the Industial Education Newsletter:

1. Developing courses in the technological areas to present students that have relevancy for their future.
2. Developing an administrative structure for the courses that gives all of the students in the secondary schools the option of taking one or more classes in them.
3. Providing and maintaining a financial base to support the technical programs which is realistic in the light of the total school program.
4. Developing a scheme by means of which an on-going evaluation can be made and feed back utilized to make modifications.
5. Maintaining teacher competency (p. 2).

Because of these concerns the Department of Education on October 21, 1969, invited one person from each school system that offered a vocational program to attend a one day Administrators' Seminar that was held at the Department of Education in Edmonton. At this seminar, twelve topics related to vocational education were discussed and reactions of the participants were solicited. These are the twelve topics that were discussed at the meeting:

- Vocational education is a part of general education
- Vocational education contributes to the objectives of general education.
- The nature of the contribution of vocational education to general education should be clarified.
- The objectives of industrial arts and vocational education should be separate. Each has a place in the high school, yet each has a different function.
- Work study programs are desireable.
- There needs to be more flexibility in credit structure.
- No vocational education course should be offered for less than a ten-credit block. However, the possibility of building to this ten-credit value by five-credit units should be investigated.
- There can be no reduction in special financial support or the program will suffer or even disappear.
- Some method of defining what is vocational education for grant purposes must be developed especially if credit values for courses are reduced.
- Articulation with the institutes is not of prime concern.
- Articulation with the apprenticeship board on a formal basis should continue.
- There must be specific consideration and support given to certain programs for certain students even if enrolments are small. (Industrial Education Newsletter pp. 3-4).

INDUSTRIAL EDUCATION COMMITTEE ESTABLISHED

In the same issue of the Newsletter, Harder mentions that the Industrial Education Committee, a Standing Committee that was appointed the previous year, held its first meeting on November 25, 1969. A review of the four newsletters that were published by the Department of Education in 1968, failed to identify the exact date when the Industrial Education Committee was appointed. As a matter of fact, this particular committee is not mentioned in any of these four publications.

Members of the Industrial Education Committee included:

D. J. Collett, Principal, Grande Prairie Composite High School
G. B. Coppinger, Instructor, Victoria Composite High School, Edmonton
C. L. Hoyme, Instructor, Camrose Composite High School, Camrose
N. J. Cameron, Principal, James Fowler Composite High School, Calgary
K. W. Freeman, Instructor, Medicine Hat High School, Medicine Hat
W. N. Pura, Director Vocational Education, Edmonton Separate School Board
F. E. Whittle, Director, Apprenticeship Board
J. P. Mitchell, Director of Vocational Education, Division of Vocational Education, Department of Education
D. W. Barrus, Instructor, Lethbridge Collegiate Institute
W. A. B. Saunders, President, Northern Alberta Institute of Technology
A. A. Day, Supervisor of Industrial Arts, Department of Education
J. D. Harder, High School Inspector of Industrial Education, Department of Education (Chairman). (Industrial Education Newsletter, p. 5)

At the November meeting of the Industrial Education Committee a number of items were discussed by members of this standing committee. Among the concepts that were discussed were these:

- The development of skill clusters rather than specific occupations
- Break large credit blocks of vocational courses into a series of five or ten credit blocks which could become parts of a comprehensive program.
- Define the areas which are common to most vocational-technical courses and use them as a core from which specialization could evolve.
- Reduce total credit assignment for vocational edcuation courses so that students on matriculation patterns can also complete a vocational program in three years.

Attempt to utilize more work study programs in coordination with vocational education.
Articulation has been more a paper program than a reality and needs reassessment" (Industrial Education Newsletter p. 3).

At this meeting, the following two motions were made, seconded and approved: The first motion that was made was:

> that an ad hoc committee be established to prepare a report outlining criteria to be used in the evaluation of the vocational education program for consideration by the Industrial Education Committee. (p. 5)

The committee that was formed was called the Industrial Edcuation Ad Hoc Evaluation Committee and was comprised of the following members:

J. Gallager, (Chairman), Univerisity of Alberta
D. Collett, Grande Prairie
W. Pura, Edmonton Separate Schools
F. Whittle, Apprenticeship Board (p. 5)

The second motion that was made was:

> that an Industrial Education Course Ad Hoc Committee be appointed comprised of teachers of the major vocational and industrial arts areas to study the overlap and duplication within vocational education courses and between vocational education and industrial arts courses and report back to the Industrial Education Committee. (p. 5)

It is evident from what was written in the March 1970 Industrial Education Newsletter, that the Industrial Education Evaluation Ad Hoc Committee was assigned the task of "developing a model upon which an evaluation could be structured" (p. 2). The members of the Committee recommended "that the 'Stake' matrix be used with a minimum of four cells to be completed for evaluation of the program" (p. 2). On the recommendation of this Committee an Evaluation Plan Ad Hoc Committee was appointed, and was assigned the responsibility for the detailed planning of the evaluation scheme which included: the design of the instrument; the methodology that would be used to secure and process the collected data; and to establish a plan to finalize the project. (p. 4)

Members that were appointed to the Evaluation Plan Ad Hoc Committee included:

- Dr. J. E. Reid, Director, Operational Research, Department of Education
- Dr. D. R. Young, Department of Industrial and Vocational Education, Univeristy of Alberta
- Mr. D. Collett, Principal, Grande Prairie Composite High School
- Mr. J. D. Harder, High School Inspector of Industrial Education. (p. 4)

Also reported in the March 1970 Newsletter was the fact that the Industrial Education Ad Hoc Committee tabled its report at the January 2nd meeting of the Industrial Education Curriculum Committee. (When this par-

ticular Committee was formed it was not documented in any of the publications promulgated by the Department of Education. Reference is made to this Committee however, in a number of subsequent newsletters.) The report that was tabled by this Committee:

> indicated areas of duplication, overlap of content between and within courses and made recommendations for streamlining the program. Their recommendations led to the appointment of a committee, the function of which would be to restructure the whole area of industrial arts and vocational education. (p. 4).

This committee, when appointed was called the Industrial Education Structure Ad Hoc Committee. The responsibilities of this Committee were to:

a. review the report of the Course Evaluation Ad Hoc Committee
b. review the letters from teachers on recommended changes
c. develop a set of objectives, based on the recommendations of the Industrial Education Committee.
d. develop a structure or model that organizes the industrial arts and vocational education courses in such a way that:
   i. there is a coordination between industrial arts and vocational education courses
   ii. transfer from one program to another is facilitated
   iii. duplication of content is removed within and between courses
   iv. provides for a "core" which is common to both groups
   v. group courses into programs which in turn meet the objectives
e. recommend a list of course titles, basic content and time requirements for further development of course revision committees. (p. 5)

Members appointed to the Industrial Education Structure Ad Hoc Committee included teachers from throughout the province, a university professor, the supervisor of industrial arts and the high school inspector of industrial education. The latter two members were from the Department of Education.

Between December 1969 and March 1970 the Industrial Education Curriculum Committee met on several occasions and made a number of recommendations to the Secondary School Curriculum Board. This Board had not acted upon these recommendations when the March 1970 Newsletter was released. One of the significant recommendations that this Committee made was "to reduce the "32" courses to 10, 15, or 20 credits in schools where flexibility was felt necessary to better utilize their facilities" (pp. 5-6). This particular

recommendation was tabled until the June 4th meeting of the Committee. Enclosed with this Newsletter was a copy of "A Rationale for Industrial Education".

It is interesting to note that before the "Rationale" was released to those concerned with all phases of industrial arts or vocational education, it had been presented to both the Advisory Board on Curriculum and Instruction and to the Secondary School Curriculum Board. The latter body however, had set aside a half-a-day at its June meeting to thoroughly debate the paper. (p. 2) Thus, the ground work was laid to allow for the orderly transition and continuing development of industrial education. To accomplish these aims, the following committee structures, both standing and ad hoc were established to amalgamate vocational education and industrial arts under the generic title Industrial Education had been put in place: Curriculum Committee; Industrial Education Structure Ad Hoc Committee; Special Education Ad Hoc Committee; Industrial Education Ad Hoc Evaluation Committee; and the Evaluation Peer Ad Hoc Committee, Figure 2 illustrates this Committee Structure.

Harder, in the June 1970 issue of the Newsletter reported that three meetings of the Industrial education Curriculum Committee culminated in the following recommendations being made to the Secondary School Curriculum Board:

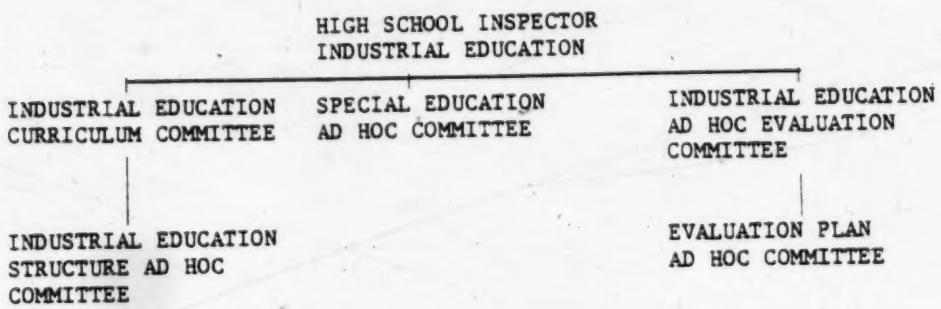
1. that an evaluation of vocational education be undertaken to compare students from that program with students from other programs
2. that experimentation be undertaken to determine the effects of introducing flexibility in credit alotments
3. that work experience definitions be accepted and credits be provided (p. 5)

The disposition of these three recommendations was that the Secondary School Curriculum Board approved the following two recommendations:

1. evaluation - the Secondary School Curriculum Board approved the pilot study proposed by the Evaluation Plan Ad Hoc Committee
2. the Secondary School Curriculum Board approved the experimentation proposals plan for next year (p. 6)

The Board also accepted in principle the definitions of Work Experience Education and the credits that would be granted for Work Experience Education. This form of education would be eligible for five-credit blocks to a maximum of ten credits. (p. 6)

FIGURE 2
INDUSTRIAL EDUCATION COMMITTEE STRUCTURE


HIGH SCHOOL INSPECTOR
INDUSTRIAL EDUCATION
INDUSTRIAL EDUCATION CURRICULUM COMMITTEE
SPECIAL EDUCATION AD HOC COMMITTEE
INDUSTRIAL EDUCATION AD HOC EVALUATION COMMITTEE
INDUSTRIAL EDUCATION STRUCTURE AD HOC COMMITTEE
EVALUATION PLAN AD HOC COMMITTEE

In addition to accepting the two recommendations the Board, after debating the whole approach to industrial education, accepted in principle both the "Rationale" and its supporting objectives for industrial education. These objectives were:

1. to develop basic competencies, both academically and in work skills to enter a job or a post-high school institution for further education
2. to provide courses that serve as a vehicle in helping students relate their academic learnings to vocational competencies
3. provide the curriculum content in aiding students to develop fundmental tool and procedural skills that prepare them to enter a family of occupations
4. to provide the environment whereby students may develop sound attitudes, acceptable work habits, and a feeling of accomplishment. (p. 7)

With the favorable disposition by the Secondary School Curriculum Board to the evaluation recommendations, two types of experiments were established to furnish insights into the problems and consequences of allowing program fleixibility and program decision making at the local level. These experimental programs were labelled Type I and Type II.

Experimental Program - Type I

The major purpose of this program was, "to provide information on how increased flexibility for local programming affects student choice and opportunity to take industrial education courses" (p. 8). To meet this purpose this Experimental Program had the following objectives:" 1. reduce credits at the "32" level to a minimum of ten, as they relate to content 2. reduce credits at the "22" level to ten, as they are required for grants" (p. 8).

Two schools were granted permission by the Department of Education to participate in this experiment; Western Canada High School, Calgary (urban) and Grande Prairie Composite High School, (rural). When these two schools became involved in this study they were also given permission to experiment with a 5-10-10 program of credit values. (p. 8) Other conditions that these schools accepted when they became participants in this experiment were: course modules must be blocked to provide a series of related experiences; one five-credit course in the program could be an industrial arts co-requisite; the experiment would be for two school years - September 1970 to June 30, 1972; and that grants would be paid for students completing the "22" course with a total of fifteen credits and the "32" course with twenty-five credits. (pp. 8-9)

Experimental Program Type II

In describing this experimental program Harder gave its major purpose "to provide information on how increased flexibility for local programming affects student interest and opportunities to enrol in industrial education courses" (p. 9).

For this experiment two schools, one urban and one rural were selected as the research schools. The schools selected were: St. Francis High School, Calgary, and Camrose Composite High School. The research objectives for this experiment were:

1. reduce the vocational education courses to modules of five credits, to be blocked together at the discretion of the local school system but culminating in an identifiable program.
2. allow schools to experminent with various combinations of content to achieve flexibility in content and time for industrial education programming. (p. 9)

When the schools agreed to participate in the experiment they also agreed to conduct the experiment under these conditions:

1. modules used for developing the program must lead to the fulfillment of a major interest area for the student and provide a series of related experiences.
2. one five-credit course in the program may be an industrial arts co-requisite
3. grants will be paid for students completing the "22" course with a total of fifteen credits and the "32" course with twenty-five credits. (pp. 9-10)

The time line established by the Department of Education for conducting Experiment - Type I and Experiment - Type II was from September 1970 to June 30, 1972.

A review of the Industrial Education Newsletters from June 1972 to May 1974 was made to determine if the results of both experiments were ever reported. The results of this review determined that there was no formal report made in any of these newsletters. Harder referred however, to these schools, at the Red Deer Conference, as the four that were involved in the credit flexibility experiment, or the modified program.

Establishing Career Fields

Content in the December 1970 issue of the Newsletter shows that the "Rationale for Industrial Education" and its tentative approval by the Secondary School Curriculum Board was discussed. As a result of that discussion it was moved by the Industrial Education Curriculum Committee:

> that the Industrial Education Structure Ad Hoc Committee be requested to design a procedure for establishing families of occupations, and designating these families if possible, upon which subsequent course revision could occur. (p.4)

The Industrial Education Ad Hoc Committee accepted this responsibility and in its deliberations felt that defining families of occupations for Alberta purposes that these families of occupations should be defined by:

1. Using the Canadian Classification and Dictionary of Occupational Titles (this publication is entitled Canadian Classification and Dictionary of Occupations to obtain descriptions of jobs and a range of logical groupings.
2. Using the information from completed studies done in North America on this topic.
3. Using the information on job groupings accumulated by current and previous advisory committee used by the institutes, the apprenticeship board and the major city school boards. (p. 5)

Subsequent to being given this assignment, the Committee developed a matrix for industrial education that arranged all of the courses in industrial arts, vocational education, home economics, and business education into nine career fields. In describing this matrix Harder wrote:

> Each field was made up of several majors and required a prerequisite. All courses were set up as five credits in length, leaving the option of combining them into ten or fifteen credit blocks to the local district. (Industrial Education Newsletter, April, 1971, p. 3)

However, when this matrix was presented to the Industrial Education Curriculum Committee at its meeting on February 24, 1971, it was rejected by the following motion:

> that at this time the Industrial Education Curriculum Committee reject the Industrial Education Matrix as submitted by the Industrial Education Structure Ad Hoc Committee and instruct the Industrial Education Ad Hoc Committee to incorporate the opinions and concerns expressed at this meeting and those received at a later date (by March 19) and present their recommendations to the Industrial Education Curriculum Committee prior to the next meeting of the Industrial Education Curriculum Committee (Industrial Education Newsletter, p. 3).

This was a temporary set back for personnel of the Department of Education because of the pressure of having the martrix ready for the Red Deer Seminar which was scheduled to be held on April 24-25, 1971. It was evident from what appeared in the Newsletter that the matrix would be reworked and be ready for the seminar. After the seminar "it (the matrix) will then again go to the committee for further modification and eventualy be approved" (p. 3).

Included in the accompanying handout was a copy of the Industrial Education Matrix. This matrix had only seven career fields instead of nine. These seven career fields were: Graphics; Mechanics; Construction and Fabrication; Electricity/Electronics; Personal Services; Performing Arts; and Horticulture. See page 127 for a figure of the Industrial Education Matrix.

A RATIONALE FOR INDUSTRIAL EDUCATION

In the interim between the September 1969 and the March 1970 issue of the Industrial Education Newsletter, it was evident that Harder had been working on a position paper that would affect the philosophical base for future program

development as well as developing the matrix that would provide a structure for industrial education. The position paper that Harder was working on was entitled A Rationale for Industrial Education. This particular document was probably the single most important one from the Department that focused on the philosophy of amalgamating industrial arts and vocational education under the generic term of industrial education and bringing in the industrial education concept into the educational structure of Alberta. This paper was written to show the need for reorganizing vocational education because of both its strengths and weaknesses.

According to the position paper, the major strengths of the vocational education program were: the diversification of the program to capitalize on the interests of students by accommodating students with a wide variety of intelligence, interest, emotional and physical makeups; the number of students who enroled in the program from 1962 to 1969 (approximately 10,000 students at the "22" level who completed these courses and 4,967 who enrolled in "32" level courses); and the development of the composite high school in the province which helped to equalize educational opportunity for the youth of Alberta. (Harder, 1970, p. 8)

Some of the major weaknesses of vocational education that Harder identified in the position paper were: the number of vocational education students that were accredited by the institutes of technology and the Apprenticeship Board were lower than anticipated; student enrolments in senior courses declined by 50% between "22" and "32" level courses; vocational education administrators in rural jurisdictions felt the need for greater flexibility in time requirements to design programs to meet the needs of students; the type of students who were able to select vocational education courses; the manner in which space for vocational education was being utilized; maintenance of staff; and the withdrawal of federal support for secondary school vocational education placed a greater financial burden onto the province. (Harder, p. 8)

The Department of Education released two drafts of the Rationale for Industrial Education. The first draft was released to various stakeholder groups, such as the University, on February 1, 1970, which was twenty-six months after the Industrial Education Committee was formed and one month before the Rationale was released to vocational education teachers, industrial arts teachers, administrators, university faculty, and other interested professionals. (Industrial Education Newsletter, 1970, p. 7)

For the purpose of the "Rationale" the term industrial education was used

> to describe a continuum of experiences, starting with the exploratory activities constituting the industrial arts program, then expanding to the development of skills related to families of occupations in the industrial education program, and finally culminating in on-the-job work experience. (p. 5)

Sometime between February 1, 1970 and the distribution of the March 1970 Industrial Education Newsletter, Harder forwarded a copy of the "Rationale" to H. T. Coutts, Dean of the Faculty of Education at the University of Alberta.

Dean Coutts, after reading the position paper and writing appropriate marginal notes, forwarded the paper on April 1, 1970 to the Department of Industrial and Vocational Education for staff reaction. In his memorandum of transmittal to staff members, Coutts wrote:

> Attached is a copy of "A Rationale for Industrial Education" prepared by Mr. J. Harder, High School Inspector of Industrial Education. I should like members of the staff of the Department of Industrial and Vocational Education to read this document and react to it either individually or through a committee of its staff. . . . In the meantime, I should welcome a tentative reaction from the members of the department. (Coutts, memorandum, April 1, 1970)

Staff members of the Department were quick to establish a Departmental Ad Hoc Committee that would follow the intent of the Coutts' memorandum. During the early part of May 1970, Dr. L. Kiem was elected to chair the committee and Drs. A. Meyers and C. H. Preitz were elected to serve as committee members. In its reaction paper the Committee pointed out that they were of the opinion that when the "Rationale" was formulated, it was based on subjective observation of existing programs and was not formulated on a sound research base. (Keim, 1970, p. 2)

Rather than analyse each section of the position paper in detail, the Committee elected to raise 25 questions for the purpose of examining the general intent of the "Rationale'. Among the questions that were asked were these:

> 1. How will the proposed industrial education continuum support "one educational program" (as stated on page 10), meet the wide range of individual differences, abilities, aptitudes, and interest, which result from social, economic, and educational deprivation?

. . . . . .

3. How will the proposed industrial education continuum "in cases where special occupational programs are needed to motivate students to remain in school" (p. 6) eleminate the possibility of the program becoming a "dumping ground" from programs for the educationally elite?

. . . . . .

4. What evidence or research supports the rationale that "in-depth-training" can be accomplished since vocational "job entry" skills have been predicated on the use of large blocks of time? (see legislation)

. . . . . .

5. What methodology will be employed to achieve the stated skill development of industrial education as stated on page 12?

. . . . . .

6. What evidence or research support the "Cluster concept" as skill development for successful employment? (Keim, pp. 2-3)

The Departmental Ad Hoc Committee, in its reaction paper, came to the general conclusion that the "Rationale" and many of the statements it contained were based on inadequate planning and rather than identify specific weaknesses of the philosophical basis for vocational education, the position paper was written for administrative implementation by the Department of Education.

This Committee in its summary statement to the "Rationale" in the reaction paper that it submitted to the Dean took the following position:

> As stated previously, this paper [The "Rationale"] raises many more questions than it answers because of its semantic obscurantism. The proposed changes include a variety of nebulous and hazy terms which are difficult to attach to the distinctly different philosophic foundations of industrial arts, as general education, and vocational education as "job entry" education. In other words attempting to combine the two separate fields, to be subsumed under one program title would seem to do nothing more than reduce the effectiveness of each by creating ultimate confusion for (a) Junior High and Senior High Students who view the school offering (relevant or non-relevant) as that which can assist them in planning their career, and (b) teachers who will carry out their individual beliefs and philosophies. (Keim, p. 8)

Attached to the March 1970 issue of the Industrial Education Newsletter, was a copy of the first draft of the "Rationale" which was explained by Harder in

the content of the Newsletter as "a position paper that I have prepared as a philosophical basis upon which to develop future programming" (p. 2). When the "Rationale" was released, Harder invited those who received the "Rationale" to provide written reactions and he stated "also, I would be pleased to meet with you in groups, to discuss the ideas contained in it. As I plan to visit most of the Composite High Schools before June, this could facilitate such meetings" (p. 2). It was evident from what he wrote that before the "Rationale" was released to the teachers it had been presented to both the Advisory Board on Curriculum and Instruction and to the Secondary School Curriculum Board. Concerning the latter body Harder stated, "has set asided half-a-day to thoroughly debate the paper at their next meeeting in June" (p. 2).

From a comparison of the "Rationale" that the university received and the one that the teachers received it was evident that Harder used the reactions that he received from the former group to revise the copy that the teachers received. It was found that the following changes had been made: the structure of some of the sentences; the way that words were sequenced; the sequence of sentences within paragraphs; and in some paragraphs, sentences were either added or deleted. The definition given for the term "industrial education" remained the same. This comparison indicated to the researcher that Harder may have made use of some of the reactions that he received when he revised the "Rationale".

A time line was attached to each draft of the "Rationale". This time line was in the form of a Gnatt Chart which showed when key events were to start and end and when each event would interface with other events. While the "Rationale" was revised the time line was not. The first event on the time line was to appoint the Ad Hoc Committee that would develop the model to evaluate the vocational education program that was in place. This Committee was appointed sometime during the month of December 1969. The last event on the time line was that of implementing the new program and providing teachers with in-service which was to start sometime in January 1974.

A second draft of the "Rationale" was written between March 1970 and February 1971. The definition for industrial education that appeared in the second draft was modified by phrase change or deletion. Phrases that were deleted were replaced by others that helped to add clarity to the definition. The definition that appeared in the 1971 edition of the "Rationale" considered industrial education as a term.

> to describe a continuum of experiences, starting with exploratory activities in the junior high school, then expanding to the development of skills related to families of occupations in the high school, and finally culminating in on-the-job experience. (p. 5)

The Red Deer Seminar

The second draft of the position paper was dated February 1971, but it was not released until the Red Deer Seminar that was held on April 24-26. It was held by the Industrial Arts and Vocational Education Specialist Council of The Alberta Teachers' Association, so that industrial arts teachers and vocational that teachers could be brought up-to-date on the concept of industrial education. At the seminar Harder presented a paper "A Proposal for Industrial Education in the Seventies". As a supporting handout Harder distributed both the "Rationale" and the "Industrial Education Matrix" that was developed by the Industrial Education Structure Ad Hoc Committee. Harder explained to those attending the meeting, that the "Matrix" was based on career groupings found in the Canadian Classification and Dictionary of Occupations. Since those present at the seminar were not familiar with the terms used in the different cells of the matrix, the following definitions were provided:

> Career Field - this represents a family of occupations or a career cluster. Courses in a career field have much in common as to the types of activities and processes involved in the occupations they represent.
> Pre-requisite - courses in either industrial arts or general technology that prepare students to a common level of competence for entry into vocational majors and minors.
> Major - a major represents course areas which develop the field. A major is any vocational education course in a career field taken for five or more credits.
> Minor - the minors are courses that supplement the majors and are selected from within the category designated as majors. A minor is any vocational course in a career field taken for five or more credits.
> Related - the related courses are related in character or function to supplement and provide greater scope in rounding out a student's program in industrial education. They include such courses as work experience, industrial arts, and business education. (A Proposal for Industrial Education in the Seventies, 1971, p. 5)

Under each career field there was either a single vocational education course or a number of these courses that could be considered a major subject in

that particular career field. To illustrate: in the Mechanic Career Field the following vocational education courses can be considered as a major: Automotives; Autobody; Aircraft Maintenance; and Agriculture Mechanics. Figure 3 on the next page is a copy of the Industrial Education Matrix that was presented at the Red Deer Seminar.

According to handouts that were distributed to seminar participants, that included teachers, administrator and university personnel, industrial education was defined in this way:

> a continuum of experiences starting with industrial arts at the junior high school and extending to the development of skills related to career fields through courses in industrial arts and vocational education, and finally culminating in on-the-job experience or entry into a post high school institution. (Matrix for Industrial Education, 1971, no page number)

When making his presentation Harder pointed out that from 1960 to 1970 there had been a number of industrial and societal changes that influenced the Department of Education to plan for change. Among these influences were: the upgrading of technologies; the tremendous development of post-high school community colleges and technical institutes in the province; the lack of enthusiasm students had shown for enrolling in high school vocational education programs especially at the grade twelve level which required one-half of the student's day; the resources to finance education had become strained; and there was an increased emphasis on accountability. (Harder, 1971, p. 3)

These influences caused the Department of Education to change its philosophy towards vocational education. Personnel within that department were aware that there were more opportunities for vocational education at the post high school level thus reducing the need for specialization at the high school level. They were also aware that more students should be encouraged to select courses that were based on career fields instead of one specialization, and that more students should be encouraged to take industrial education through more flexible time requirements.

Although the Department had changed its philosophy toward the organization, programing and time alotted for vocational education it had not changed its position on:

FIGURE 3
INDUSTRIAL EDUCATION MATRIX
RED DEER SEMINAR

CAREER	PRE-REQ.	MAJOR I.A.	MAJOR V.E.	MINOR	RELATED
GRAPHICS	GRAPHIC COMMUNICATION GEN. TECH.	GRAPHIC COMMUNICATION	DRAFTING GRAPHIC ARTS COMMERCIAL ART	ANY MAJOR	WORK EXPERIENCE INDUSTRIAL ARTS BUSINESS EDUCATION
MECHANICS	POWER GEN. TECH.	POWER	AUTOMOTIVES AUTO BODY AIRCRAFT MAINT. AG. MECHANICS	DRAFTING WELDING MACHINE SHOP ELECTRICITY BLDG. CONST.	AS ABOVE
CONSTRUCTION & FABRICATION	MATERIALS GEN. TECH.	MATERIALS	BLDG. CONST. PIPING MACHINE SHOP WELDING SHEET METAL	DRAFTING AUTOMOTIVES AUTO BODY ELECTRICITY	AS ABOVE
ELECTRICITY ELECTRONICS	ELECTRONICS GEN. TECH.	ELECTRONICS	ELECTRICITY ELECTRONICS	DRAFTING AUTOMOTIVES	AS ABOVE
PERSONAL SERVICES	HOME ECONOMICS GEN. TECH.	FOODS FABRICS FAMILY LIVING	FOOD PREP. BEAUTY CULTURE SEWING HEALTH SERVICES	DRAFTING COMMERCIAL ART	AS ABOVE
PERFORMING ARTS	DRAMA MUSIC		PERFORMING ARTS T.V. CRAFTS	DRAFTING ELECTRICITY BLDG. CONST.	AS ABOVE
HORTICULTURE			HORTICULTURE FORESTRY	DRAFTING AUTOMOTIVES	AS ABOVE

Taken from: A Proposal for Industrial Education in the Seventies

1. the requirement of trade certification for teachers teaching vocational courses;
2. formal approval of shops or labs to be used for vocational courses;
3. the need for instruction periods of adequate length to complete routine tasks;
4. the quality of courses that will be taught;
5. the need to provide an orderly transition from school to work or to higher education. (Harder, p. 4)

A motion was made and carried, "that the Industrial Education Matrix be accepted in principle". Accompanying that motion were the concerns that were expressed about the "proposal". Some of the more major concerns had to deal with: the number of credits for prerequisite courses; the flexibility of conducting credits to meet the needs of individual students; the grant structure which would allow any student to carry the maximum course offering without penalty to the local school board; work study and work experience; the need for the Department of Education to continually recognize special programs for students with special needs; and that the implementation of the matrix approach be delayed until full, impartial studies had been completed. (Ilchuk and Manual, 1971, pp. 7-8)

In speaking to the concerns that were presented, Harder responded to each one in turn. On the concern of pre-requisites he said, "the pre-requisite would be structured so that it focuses on orienting the student to the career field it represents and at the same time would begin development of basic tool and procedural skills" (p. 5). In further discussing pre-requisites Harder discussed how industrial arts cluster courses could be used by students to enter a vocational education program. Harder reported on the four schools that were involved in the modified program, the credit flexibility experiments that were conducted in selected schools. Harder stated that informal reports from all four schools indicate:

1. enrolments are up by 29% in St, Francis, 26% in Camrose, 23% in Western Canada and 10% in Grande Prairie.
2. St. Frances and Camrose are experiencing a very successful year with the industrial education program. St. Frances has requested to expand their program to include another area. This sounds rather healthy to me when in contrast there are other school boards who are considering a cut back in programs.
3. The utilization of the facilties by a more heterogeneous group of students appears to have been achieved.

4. Students that want to complete a full program have had the opportunity to do so. Some scheduling problems were encountered but were not of a restricting nature. (Decision for a Decade, undated, p. 11)

DIRECTIONS FOR ACTION

The "Rationale for Industrial Education" included ten separate actions that could be taken to implement the proposed educational concept into the educational structure of the province. The first action called for a research design to evaluate the past effectiveness of the vocational education program but Harder was of the opinion that the information the Department of Education possessed strongly indicated that planning for revision negated this type of study. Action two asked that reviews be made by a Course Evaluation Ad Hoc Committee of courses, of industrial arts, vocational education, home economics and business education to determine the extent of duplication of course content, amount of repitition and relevancy of course materials. A model that would coordinate industrial arts and vocational education under the title of "industrial education" should be developed and submitted to the Secondary School Curriculum Board for approval. This was the third action to be taken. In discussing this action, Harder pointed out that these two programs were distinct in their objectives, types of facilities and equipment and variation in teacher competencies. (Harder, p. 14) The fourth action that Harder advocated was that all course revision should conform to the new program structure. Closely related to this action was the fifth action, which was that equipment costs and laboratory design should be developed to facilitate the implementation of the industrial education courses.

The sixth of the ten actions to be taken to implement industrial education was directed toward the teacher preparation program at the university. This particular action called for a review of the teacher education program to implement changes that were needed.

The seventh action explicitly stated that "each revised course will be tested in a number of selected schools before being authorized for general use" (p. 15).

Harder, in the "Rationale" listed as the eight action the following: The total industrial education program with course content, evaluation procedures,

equipment lists, facility requirements and cost estimates for the province will be submitted to the Secondary School Curriculum Board. (p. 16)

Harder was aware that teachers would have to be in-serviced in order for them to implement the courses that would be designed. Action nine focused on this need, "In-service education programs of many kinds should be held. These include: institutes, video-taped presentation, Saturday workshops" (p. 16).

The last of the ten actions that Harder proposed was directed at the evaluation of the proposed program. "Evaluation of the program to provide constant feedback into the system must be a continual process. Modifications based on the feedback can then be programmed immediately" (p. 16).

Personnel from the Department of Education associated with industrial education and vocational education felt that a new approach had to be taken in these two subject areas to cope with the problem of dealing with the exponential rate of expansion of knowledge found in a technologically based society.

These educational leaders were of the opinion that a teacher must not only pass on knowledge and mores of society but they must also improve learning habits of students so that they could enquire, study independently, make decisions and choose new educational routes for themselves.

To achieve these goals, the Department of Education, through J. Harder, and A. Day, took the position that all students should have equal access to "industrial education" courses depending on the students' interest, abilities and the facilities of the school. They felt that the structure for industrial education should include the development of skills in the three learning domains; that all courses taken in the secondary schools should lead to a common goal, the high school diploma; that industrial education courses should provide a range of experiences in a subject area beginning with general introductory work that would develop an occupational level of skills for entry into the world of work or to a post-secondary learning environment; that there should be continuous evaluation on how well the educational system was meeting the objectives that were set for it; and that the educational system should be responsible for anyone under the age of 18 to reach the next stage in development which could include part time school, part time work or entrance into post-secondary education.

Revised Industrial Education Matrix

It was approximately nine months after the Red Deer seminar that the revised Industrial Education Matrix first appeared in a publication of the Department of Education the June 1972 Industrial Education Newsletter. There were several major modifications that were made to the matrix between 1971 and 1972. These are the modifications thate were made:

> Added to the title of the matrix was the following explanatory note to explain the terms used
> Exploratory Courses - industrial arts and home economics courses at the junior high school level and general technology at the high school level (5-15 credits)
> Industrial education general was substituted for the pre-requisite heading.
> Industrial education major replaced the heading of major industrial arts and vocational education.
> Industrial education minor replaced the heading minor.
> A more thorough explanation of the industrial education minor courses that could be used to supplement the major was provided. (p. 5)

Personnel of the Department of Education considered the matrix to be an outline of the proposed industrial education program that consisted of seven career fields that included: Graphics, Mechanics; Construction and Fabrication; Electricity/Electronics; Personal Services; Performing Arts; and Horticulture.

For each career Field, a Career Field Chart was provided which outlined the titles and the content for each module of the industrial education major. The Career Field Chart also gives the following information: (1) the major subject in each career field; (2) the names of the specific content in each module under each major; (3) the first level courses which lead to the second or "22" courses; (4) the sequence in which courses may be taught; and (5) the minors that qualify for industrial education grants. (Industrial Education Newsletter, 1972, p. 4)

This concept is illustrated in Figure 4 on the following page. From this chart it can be seen that in the Graphics Career Field the industrial education major "Drafting" consists of six modules for the "12", "22", "32" series of courses. Drafting "12" consists of one module; Drafting "22", two modules - 22A; 22B; and 22C Drafting "32" has three modules - 32A, 32B, and 32C. These modules could be used in blocks as small as five credits or as large as 35 credits.

When the Career Field Charts were ready course guides were being prepared and were considered by the Curriculum Branch to be interim.

Approximately one year after the seminar, the Curriculum Branch of Alberta Education in 1972 published the Handbook in Industrial Education for Guidance to Teachers, Counsellors, and Administrators. (1972) The purpose of that Handbook was to provide information that was readily accessible to those concerned with the newly established Industrial Education program. Part of the content of that publication is a revised form of the "Industrial Education Matrix'. On page 2 of the Handbook the revised definition for industrial education is also included.

Comparing the Visual Communications Career Field Chart that accompanies this matrix with is predecessors it is evident that one additional module was added to Drafting. This module was labelled 22C, Topographical Drawing, which was categorized as module 32C on the first Career Field Chart that was released by the Department of Education. This brought the total number of modules to six for the Drafting program.

The definition for industrial education, in the Handbook was given in this way:

> Industrial education is a program consisting of courses that provide a continuum of experiences, starting with exploratory experiences and activities in the elementary and junior high school, expanding in the high school to the development of skills in career fields, and culminating in on-the-job experience. (p. 2)

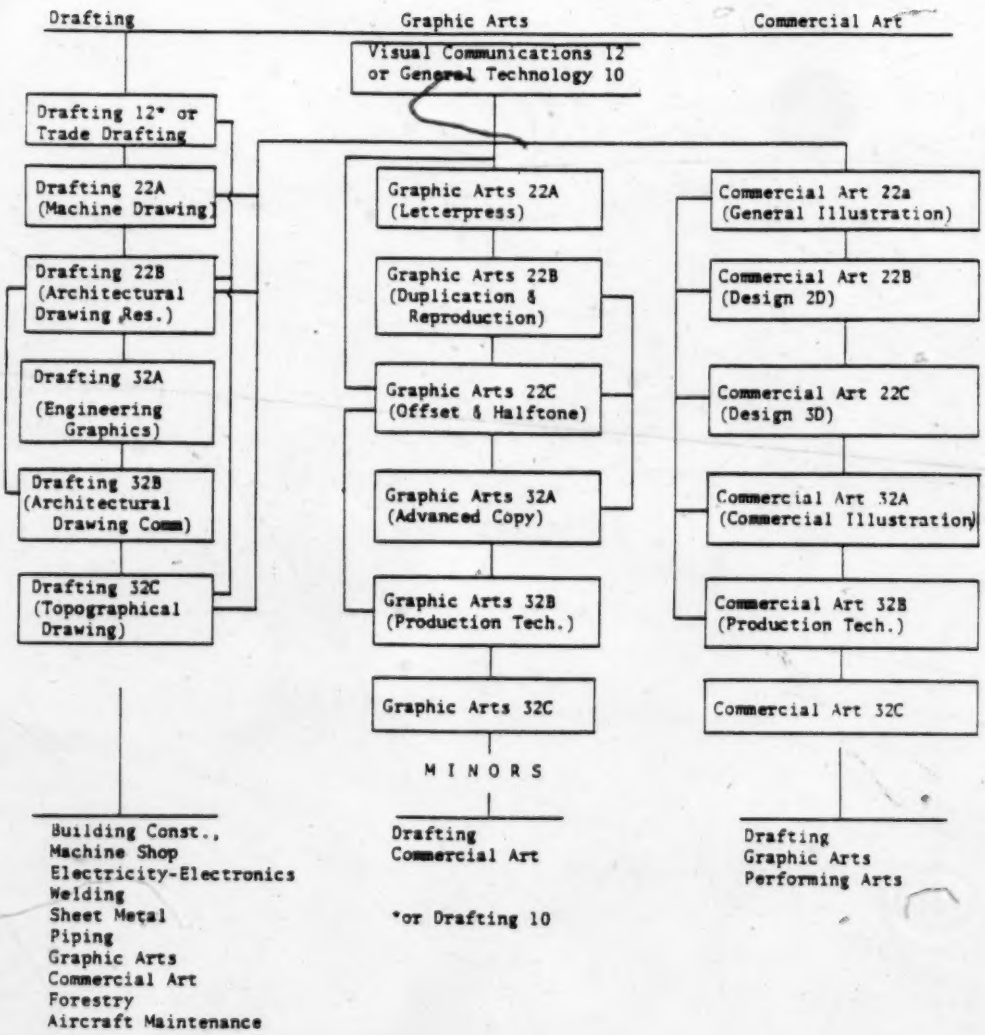
An analysis of the wording of this definition with its predecessors will show that the definition was written to clarify the intent of the program so that it was easily understood by the layman. In writing the Handbook definition, Harder identified industrial education as a program per se, and he removed from the definition the specific reference to industrial arts. This he did when he wrote "exploratory experiences and activities in the elementary and junior high schools" (p. 2). Although this definition inferred a complete ladder of industrial education from Kindergarten to post-high school, this was not a fact.

Prior to November 1973 there was no program at the elementary school level that provided for the integration of practical activities. Because of this void the career education ladder in the educational structure of the province was incomplete. In November 1973, the Industrial Education Curriculum Committee initiated the concept of Integrated Practical Activities.

FIGURE 4

Career Field - VISUAL COMMUNICATIONS

MAJORS



Taken from: Industrial Education Newsletter, June, 1972

During the 1972-73 school year, the Calgary Board of Education, the Edmonton Catholic School Board, and Alberta Education conducted studies into the use of integrating practical activities into the elementary school program. By May 1974, the Elementary Curriculum Board accepted the Rationale for Integrated Practical Activities (IPA) which is a strategy and not a curriculum. It is one of the many teaching strategies that attempts to bridge the barrier between the various subject disciplines and thereby introduce practical activites for elementary grades. (Integrated Practical Activities for Elementary Grades, 1980, pp. 2-3) The IPA program involves any activity in which a student is required to construct, plan or use tools. IPA is a "learn by doing" method of teaching. It is also an attempt to reinforce other disciplines of study and to relate these disciplines to each other. With the exception of in-service programs and workshops, teachers for the IPA program are not specifically trained to teach in this subject area.

Figure 5 is a paradigm for the industrial education program and the five levels of integration to prepare a learner for the world of work or for further education.

The Handbook was revised in 1974, 1976, 1979, and 1982. In all of these revision, the definition for industrial education, the matrix and the career field charts remained unchanged until the 1982 revision of the handbook was released. When this publication was released the title was changed to the Industrial Education Manual for Guidance to Teachers, Counsellors and Administrators. A comparison of the 1982 content with its predecessors shows that the definition for industrial education is stated in this way:

> industrial education is a program consisting of courses that provide a continuum of experiences, starting with exploratory experiences and activities in the elementary and junior high school, expanding in the high school to the development of skills in career fields, and culminating in on-the-job experience. (p. 2)

Major modifications were made to the matrix when the Department of Education made the decision to designate the career field of Performing Arts as a locally developed course. Similarly, the decision was made to make the programs of Aircraft Maintenance, Fashions and Furnishings, Television Crafts, and Commercial Art all locally developed courses instead of provincially

developed courses. When that decision was made the numbering system for these courses changed from "12". "22". "32" to "15", "25", "35". This was noted in the September 1981 issue of the Industrial Education Newsletter:

> 1. That Aircraft Maintenance 13, 12, 22A, 22B, 22C, 32, 32B, and 32C be designated a Locally Developed Course for the County of Strathcona and further that the course designation be changed to 15, 25A, 25B, 25C, 35A, 35B, and 35C.
>
> . . . . . .
>
> 5. That Fashions and Furnishing 12, 22A, 22B, 22C, 32A, 32B, and 32C be designated a Locally Developed Course for the Calgary School District #19, Edmonton School District #7, and Calgary RCSS District #1, and further that the course designations be changed to 15, 25A, 25B, 25C, 35A, 35B, and 35C.
>
> . . . . . .
>
> 8. That Performing Arts 12, 22A, 22B, 22C, 32A, 32B, and 32C be designated a Locally Developed course for Calgary School District #19, and Calgary RCCS District #1, and that the course designations be changed to 15, 25A, 25B, 25C, 35A, 35B, and 35C.
>
> . . . . . .
>
> 9. That Television Crafts 12, 22A, 22B, 22C, 32A, 32B, and 32C be designated a Locally Developed course for Central Memorial School of Calgary School District #19, Victoria School of the Edmonton School District #7, and St. Joseph's School of the Edmonton RCSS District #7 and further that the course designations be changed to 15, 25A, 25B, 25C, 35A, 35B, and 35C.
>
> . . . . . .
>
> 12. That Commercial Art 12, 22A, 22B, 22C, 32A, 32B, and 32C be designated a Locally Developed course and that the course designation be changed to Commericial Art 15, 25A, 25B, 25C, 35A, 35B, and 35C. (p. 6)

With these changes these courses were placed under the category "Courses Offered Under Special Circumstances in Certain Schools". Other courses that were changed to locally developed courses but which never appeared in the matrix include: Appliance Servicing; Building Maintenance; Dry Cleaning; Mining; Heavy Duty Equipment Operation; Forestry; and Surveying Technology.

Work Experience Education

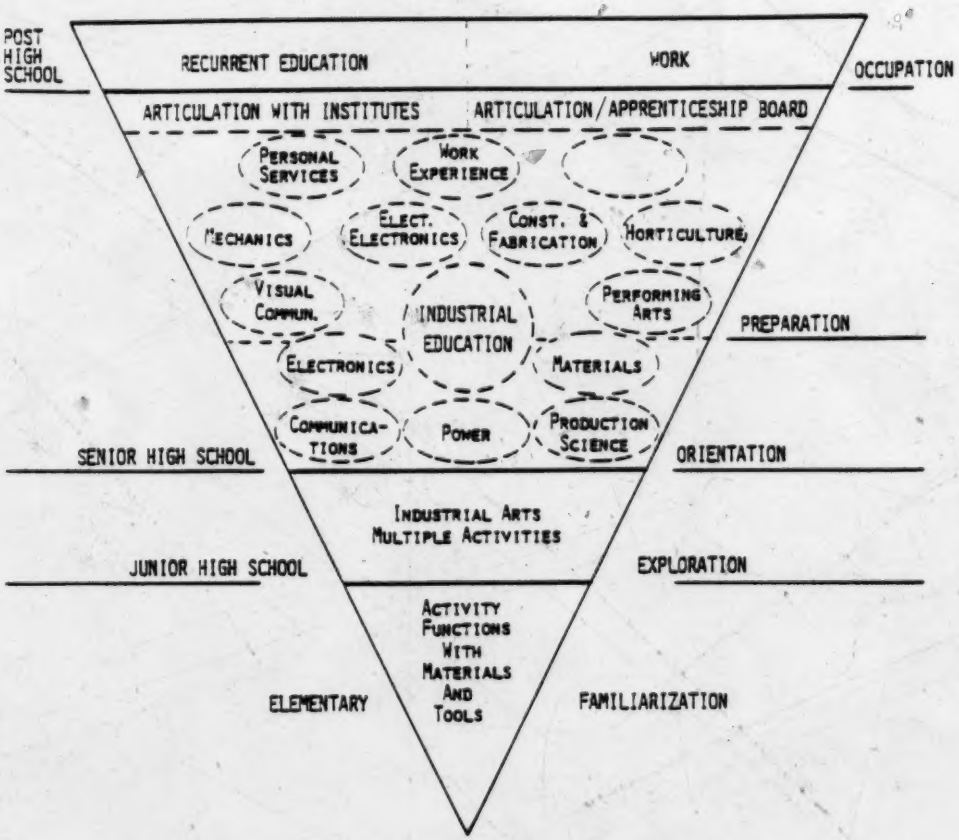
Prior to the release of the Industrial Education Matrix, the concept of work

FIGURE 5

ALBERTA INDUSTRIAL EDUCATION PROGRAM

FOR

CAREER CHOICE AND DEVELOPMENT



LEGEND: ____ SOLID LINE INDICATES LEVELS.

----- BROKEN LINES AND OPEN SPACES INDICATE OPPORTUNITY TO TRANSFER TO OTHER OPTIONS.

Taken from: Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators, 1976

experience education was non-existant in the educational structure of the province. The majority of vocational education and industrial arts teachers were first made aware of this program when they were informed that it could be found in the Related Column of the Matrix. It will be recalled that related courses of the matrix fall into one of three categories of courses: work experience; industrial arts; or business education. (Industrial Education Newsletter, 1971, p. 4) By definition, "Related" means, "courses related in character and function to supplement and provide greater scope in rounding out a student's program in industrial education" (p. 4).

To trace the evolution of the concept of work experience education a review was made of the Industrial Education Newsletters, and its predecessor the Industrial Arts Newsletter that were published by the Department of Education from December 1963 to March 1982. It was reported that one of the topics discussed at the Administrators' Seminar of October 21, 1969, was the desirability of work-study programs. (Industrial Education Newsletter, December, 1969, p. 3) In that Newsletter it was also reported that a Committee on Special Programs had been established to set up guidelines for programs and students who fell into the pre-employment category. One of the programs that the Committee discussed was the "work experience or work study program", which the Committee "felt to be very effective and should be part of any such program" (p. 9).

A definition was provided for Work Experience Education and its two components, work study and work experience, by the Special Education Ad Hoc Committee. The definitions for these terms appeared in the March 1970 Newsletter.

> Work Experience Education - employment undertaken as a part of the requirements of a school program, designed to provide planned experience in an occupation which is supervised by a teacher-coordinator and the emloyer. Work experience education is a title that includes work-study and work experience as defined next.
> Work Study - work-study is employment undertaken by a student as an integral part of a planned school course which is under the cooperative supervision of a teacher-coordinator and the employer.
> Work Experience - work experience is employment undertaken by a student as an integral part of a planned school program which is under the cooperative supervision of a teacher-coordinator. (pp. 8-9)

These definitions were sent by the Special Education Ad Hoc Committee to the Industrial Education Curriculum Committee for review and approval. According to the Newsletter, the latter committee made three recommendations to the Secondary School Curriculum Board concerning industrial education. It was recommended "that work experience definitions be accepted and credits provided" (p. 5) From what appeared in the Newsletter it was evident that the Secondary School Curriculum Board had accepted the following definitions for work experience education:

(a) Work Experience Education - Employment undertaken as a part of the requirements of a school program, designed to provide planned experiences in an occupation, which are supervised by a teacher-coordinator, and the employer. Work experience education is a title that includes work-study and work experience,
(b) Work Study - Work-Study is employment undertaken by a student as an integral part of a planned school course which is under the cooperative supervision of a teacher-coordinator and the employer.
(c) Work Experience - Work Experience is employment undertaken by a student as an integral part of a planned school program which is under the cooperative supervision of a teacher-coordinator and the employer. (p. 9)

A comparison of these two definitions shows that the definition presented to the Secondary Curriculum Board was modified by adding the prepositional phrase "and the employer" to the definition for all of the terms. When these definitions were accepted by the Board it indicated what courses would be granted credit and the amount of credit that would be granted:

(a) High school students should be eligible for credits in work expereince education.
(b) Work Study, being a part of a regular course, does not qualify for additional credits.
(c) Work Experience credits will be granted for work experience.
(d) Work Experience will be eligible for credits in five-credit blocks to a maximum of ten credits. (p. 6)

In addition to establishing credits for the various components of work study education the Board also established the qualifications for the teacher who would coordinate these courses in a school, "School officials holding a valid teaching certificate must be involved in the planning, organization and evaluation of the students program to qualify the student for credit" (p. 7).

From June 1970 to September 1970 personnel of the Department of Education had assigned the numerical designators "15 and 25" to Work Experience Education in order to designate them as industrial education courses in the province. "School systems which want to utilize the credits available through work experience 15 and 25 must get approval from the High School Inspector of Industrial Education" (Industrial Education Newsletter, September 1970, p. 2). With these courses designated "15" and "25", they were considered by the Department of Education to be locally developed courses.

In reporting on the status of implementing the work experience program, Harder indicated in the December 1970 Newsletter, that there was a lot of red tape that had to be cut in order to get the program rolling. (p. 6) Students enrolled in work experience were placed in the world of work to work alongside of a skilled tradesman. In that working environment there was the possibility of the student becoming injured on the work site. Should this occur Workmen's Compensation would become involved. To extend benefits provided by the Workmen's Compensation Act to students who became injured while on work experience an Order-in-Council was signed on November 17, 1970. To qualify for Workmen's Compensation coverage:

> students must be registered in the school and have met the regulations concerning contract, parental consent, and liability insurance coverage. The school must have the work experience application approved by the Department of Education, Board of Industrial Relations and The Apprenticeship Branch. If a student is injured whilst engaged on a work experience program he will be entitled to the benefits provided by the Workmen's Compensation Act. Employers are now relieved of paying assessments to the Workmen's Compensation Board for students. In case of accident, the costs are not charged to the employer. (p. 6)

When the Order-in-Council was issued there were nearly 700 rural and urban students enrolled in work experience for credit.

At the May 29, 1971 meeting of the Secondary School Curriculum Board three motions were passed which affected industrial education and Work Experience Education. The three motions that were passed stated:

1. that vocational education courses be available in modules of five credits.
2. that the matrix be approved in principle.
3. that course revision committees be set up to rewrite the vocational education courses in conformity with the objectives and philosophy expressed in the "Rationale" and the "Matrix". (Industrial Education Newsletter, 1971, p. 2)

When the Board passed these motions it accepted and approved Work Experience Education because it was an integral part of the seven career fields of the "Industrial Education Matrix".

Sometime prior to December, 1971, the Department of Education initiated research to determine the opinion of both students and their employers toward the work experience program. The results of this study showed strong support for the program from both groups. It was reported in the December 1971 Newsletter that:

> students were enthusiastic and liked the experience. Many were finding job opportunities for after school and holidays while others became permanently employed. The employers, too, were very supportive, with over 90% of those responding indicating their satisfaction with the students. (p. 4)

At the time of that research, 1971, the courses were designated Work Experience Education "15" and "25" which were course numbers for Grade X and Grade XI courses. The numbering system for these courses was changed in September 1972 to "25" and "35" with no change in credits. (p. 4) Thus, these courses remained locally developed courses.

Due to of the nature of the Work Experience Education program and because of the hours a student could be employed, teachers were alerted that to problems could that arise if the program was undertaken at times that were considered part of the normal school day. In addition to coming under the supervision of the school, Work Experience Education also came under the supervision of the Department of Education, the Board of Industrial Relations and the Workmen's Compensation Board. (Industrial Education Newsletter, 1973, p. 3)

Work experience as a high school course appeared in the "Related" column of the Matrix that was presented at Red Deer. The courses of this program were made eligible for credits in September, 1970. However, this program was not described in detail until the third edition of the Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators was released by the Curriculum Branch in 1976. Not only does the Handbook adequately describe the course, it also states that 125 hours of time will be devoted to Work Experience "25" and "35". For this course the Handbook also suggests that formal lessons be given on the following topics: defining occupational interest, job interviewing, preparing a resume, deportment, and other related topics.

Since 1970, the Curriculum Branch has issued two Work Experience Handbooks for those involved in Work Experience Education. The major objective of this publiction is to provide assistance and guidance to those involved in work experience to help these individuals organize and operate a program that provides meaningful learning experience to the students. (Work Experience Education, 1980, p. 1)

Legal Basis for Work Experience Education

The legal basis for Work Experience Education, according to information in the June 1973 Newsletter, can be found in Section 161 of An Act Respecting Public and Separate Schools, 1970 where it is stated:

> A board may approve work experience programs for pupils in its schools. Where a board wishes to send pupils on a work experience program, it shall obtain the approval of:
> 1. the pupil's parents
> 2. the minister or person designated in writing by him, and
> 3. the Board of Industrial Relations.
>
> A pupil attending a work experience program shall receive credit for attendance at school for the time he spends in the program. (1970 C.100,S.161)

In addition to the above conditions there were conditions and criteria set out by the Department of Education and the Board of Industrial Relations for school boards who wanted to participate in this form of education. The criteria established by the Department of Education can be found in the Junior and Senior High School Handbook (1972-73) which is a legal document of the Department. The following criteria are given in this Handbook:

1. school board approval of the course
2. an annual approved application signed by representatives from the Department of Education, the Board of Industrial Relations, and the Appprenticeship Branch
3. a school appointed teacher-coordinator responsible for the students in the program
4. availability of community work stations
5. a systematic evaluation procedure
6. that work times are between 0800 and 1800 hrs. on regular schools days. These are the hours that students will be covered by Workmen's Compensation Insurance
7. a contract between the student and the employer. (p. 17)

The June 1973 Industrial Education Newsletter included conditions that were established by the Board of Industrial Relations for a school that wanted to involve its students in work experience:

(1) That the work hours be between 8:00 a.m. and 6:00 p.m.
(2) That the ratio of students to employees be as follows:
(a) 1 student where the employer's work force comprises up to 5 employees.
(b) 2 students where the employer's work force comprises 6 - 10 employees.
(c) 3 students where the employer's work force comprises 11-15 employees.
(d) 4 students where the employer's work force comprises 16-20 employees.
(e) 5 students where the employer's work force comprises 21-25 employees.
(f) where the employer's work force exceeds 25 employees, the number of students shall not exceed 15% of the employers total work force.
(3) That the contract between the student and the employer stipulate the hours and the time the student is to work, and include a statement that the student will not replace a regular employee. (p. 5)

Students enrolled in work experience in this province are also governed by The Alberta Labour Act, 1976; The Alberta Labour Act, 1973, Alberta Regulation 318/74; and Federal Government Labour Legislation. Under the 1976 Labour Act the Board of Industrial Relations Order No. 1 (Governing Minimum Wages) was signed in 1975. This Order-in-Council exempts an employer from paying the minimum wage to students enrolled in an approved work experience program. (Work Experience Education, 1980, p. 13)

According to the Order-in-Council:

1. This Order applies to all employees in any employment and to their employer except:
(d) students participating in a work experience program of a school board where the work experience program is approved by the Board and by the Minister of Education, or person designated by him under Section 161 or the School Act. (Work Experience Education, p. 14)

Alberta Regulation 318/74 of the 1973 Alberta Labour Act limits the age of students in work experience to 15 years of age or older. This regulation also defines an adolescent as a person 12 years of age or older, but under the age of 15 years. This regulation restricts the employment of an adolescent to two hours on any day which the adolescent is required to attend school. This regulation also provides for the type of occupations in which an adolescent may be employed. The Handbook on Work Experience Education lists these occupations:

(a) as a delivery person of small wares for a retail store, or
(b) as a clerk or messenger in an office, or
(d) as a delivery person for the distribution of newspapers, flyers, or handbills if that occupation is not, or is not likely to be injurious to the life, health, education, or morals of the adolescent. (p. 14)

Section 48.1 of the Workmen's Compensation Act (Part 4) 1973 and amended by Bill 20, 1975, includes in its list of institutions secondary schools. Specifically this section of the Act states:

48.1 In this section "institution" means
(a) any university, public or private college, institute of technology, agricultural and vocational college, vocational training centre or secondary school.

Subsection .2 of Section 48 of this Act states:

48.2 Where a person has been committed, or admitted to an institution, and
(b) is participating in a work training, or similar program either inside or outside the institution, he shall, while so engaged, be considered a worker employed by the government for the purposes of this Act.

These two exceprts from the Act consider students employed under an approved secondary school Work Experience Program to be employees of the Government of Alberta for the purposes of the Act. (Work Experience Education, 1980, p. 15) In the event should a student become injured while on work experience the student has the protection and is eligible for benefits provided under the Act. Should a student become injured while working the employer or firm is not assessed for the accident since the student is an employee of the government.

According to information in the Work Experience Education Manual, 1983, "The Department of Education assumes the responsibility to cover all bona fide students in work experience education programs for Workers' Compensation" (p. 14). For insurance purposes students travelling to and from a work station are covered similar to the coverage these students have going to and from school.

For a work experience student to be placed in a work station that is under labour legislation of the federal government that individual must be at least sixteen years of age. Firms that fall under this legislation include:

(a) all banking institutions
(b) all interprovincial tansportation companies, e.g. railways, airlines, trucking firms

(c) all communication industries, e.g. radio, television, telecommunication
(d) R.C.M.P. and the military
(e) post offices
(f) federal government departments
(g) grain handling companies (Work Experience Education, p. 16)

IMPLEMENTING INDUSTRIAL EDUCATION

The Industrial Education Program took approximately four years to develop and to provide an articulated career education ladder for students from kindergarten through high school and beyond. This five phase program: Familiarization, Exploration, Orientation, Preparation, and Occupation begins in the elementary school and terminates either in the world of work or in a post secondary educational setting. Figure 6 shows a paradigm of the industrial education program. The Familiarization Phase in the elementary grades permits the students to become involved with the use of materials and tools which are integrated with other learning activities. For this phase the Department of Education does not provide any curriculum guides, nor is the teacher expected to be a specialist in industrial arts or vocational education.

Junior High School

The second phase of the industrial education program begins at the junior high school level, Grades VII, VIII, and IX. This is the Exploratory Phase of the program, and provides the student with an overview of several material and technology areas. Where the emphasis is on a "hands on" approach to education, supplemented by theory.

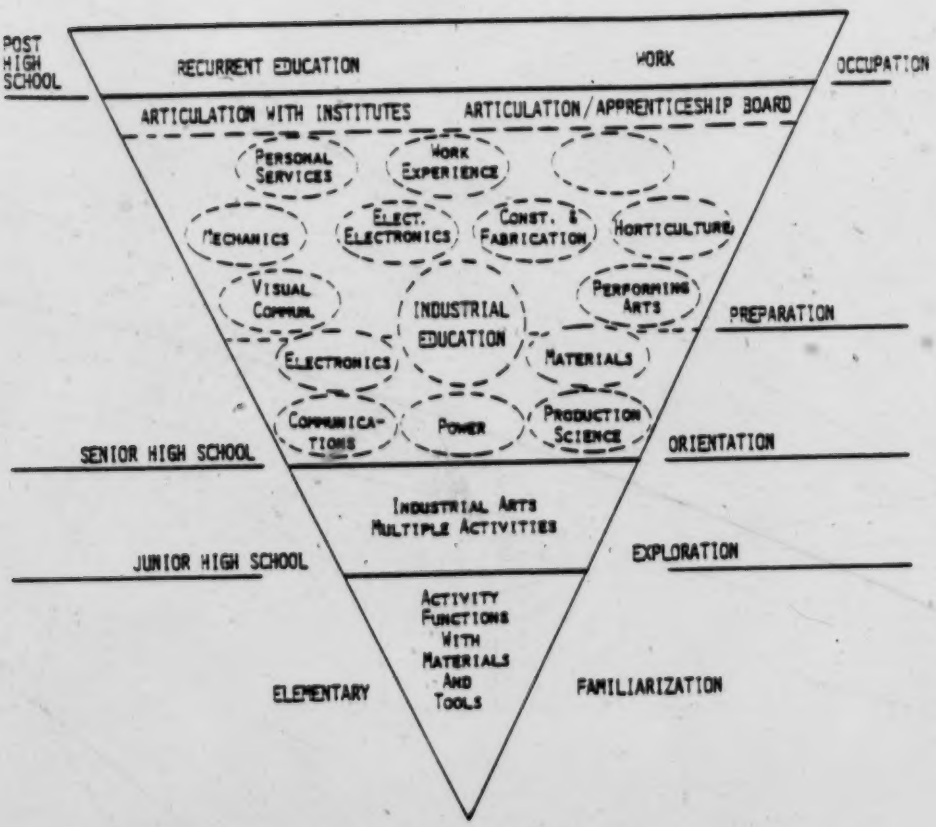
Students enroled in Grades VII, VIII, and IX are required to take the following compulsory core subjects: Language Arts, Social Studies, Mathematics, Science, and Physical Education and Health. In addition to these core subjects, students in Grade IX are required to take Guidance. Instructional time for core subjects varies from 25 hours per course (Guidance) to 150 hours per course (Language Arts). The structure of the junior high school program is such that the following minimum time has been alotted by the Department of Education for the core subjects.

FIGURE 6

ALBERTA INDUSTRIAL EDUCATION PROGRAM

FOR

CAREER CHOICE AND DEVELOPMENT



LEGEND: ____ SOLID LINE INDICATES LEVELS.

----- BROKEN LINES AND OPEN SPACES INDICATE OPPORTUNITY TO TRANSFER TO OTHER OPTIONS.

Taken from: Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators, 1979

Language Arts 150 hours
Mathematics 100 hours
Science 100 hours
Social Studies 100 hours
Physical Education and Health 75 hours
Group Guidance (Grade IX) 25 hours
(Junior-Senior High School Handbook, 1981-82, p. 9)

To give each student the opportunity to explore their interests and abilities in cultural, practical, and academic subjects two groups of options are available at the junior high school level. Group A Options are exploratory, while Group B Options are for enrichment. (Junior-Senior High School Handbook, 1981-82, pp. 8-9) Industrial arts is classififed as a Group A Option. Options in the Group A category include Home Making, Industrial Education, and Typewriting, for the Practical Arts. Alberta Education provides curriculum guides for Industrial Education courses. These guides are not provided for Group B Options.

Industrial Education at the junior high school level is taught in a learning environment which is organized as a multiple activity laboratory. A multiple activity laboratory is described in the Junior High School Grades 7-8-9 Industrial Education Curriculum Guide (1982), as an:

> organizational device through which a variety of technology based, exploratory experiences, can be presented in a minimum of space with a minimum of equipment. The laboratory is organized into a number of different areas representing components of the fields of study. Each area within a laboratory is as self-contained as possible with provisions made for the storage of tools, products, and stock within it. The class is divided into three or more groups with each group working through the course in the assigned area. (p. 3)

In square metres each area is large enough to accommodate between four to six students. In the learning environment of a multiple activity laboratory the product (project) is considered as the vehicle through which instruction takes place.

The Junior High School Grades 7, 8, 9 Industrial Education Curriculum Guide, 1982 recommends that seventy-five hours per year be allotted to industrial arts or two hundred and twenty-five hours over the three years of junior high school be devoted to this particular program of study. (p. 10) The Curriculum Guide further states "During the junior high school years it is

recommended that a student study a minimum of three different modules each year" (p. 3). Consequently the recommended minimum time allotment for Industrial Education at the Junior High School level is seventy-five hours (75 hours) each year (225 hours over 3 years).

Course content is divided into the following four fields of study: Power Technology; Materials Technology; Graphic Communications Technology; and Synthesizing. To provide for a breadth of exploratory experiences for the junior high school student these four fields of study are further divided into fifteen modules. To illustrate: the Material Technology field of study is divided into five modules which include: Woods, Metals, Plastics, Earths, Leather and Textiles. The scope of the industrial arts program is to allow all students to have the opportunity to explore the four fields of study.

In each field of study each of the fifteen modules represent between fifteen to twenty-five hours of study for the student to complete. Sequencing of these modules is not prescribed by any authority, but rather by the industrial education teacher, so that the student is provided with the most worthwhile learning experiences possible. Content in each module is rigidly specified, and is outlined in Appendix II of this study. Figure 7 illustrates the relationship that each module has to a related field of study. Personnel of Alberta Education strongly recommend that modules in the Synthesizing Career Field not be attempted until the students have had experience in the other fields of study.

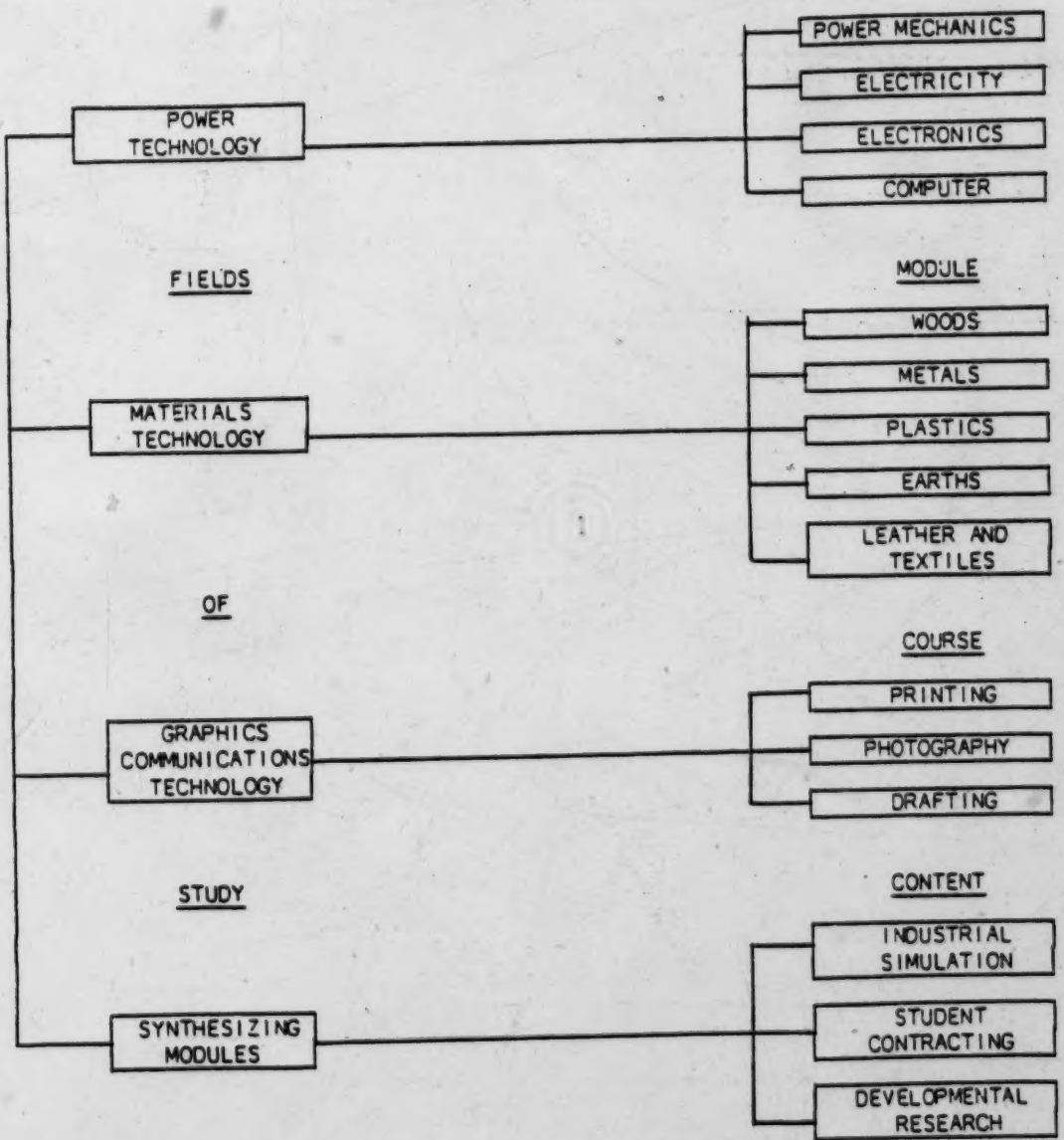
Senior High School Industrial Education 10, 20, 30

Industrial Education at the junior high school level was the Exploratory Phase of the five phase program. In that phase students were given the opportunity to explore, reason, experiment and discover materials, processes, products, and occupations that are found in a productive society.

Following the Exploratory Phase of the industrial education program is the Orientation Phase which provides the student with an awareness of the inter-relationship and the dependency of one technology upon the others. In this phase students have the opportunity to develop an understanding of the principles and skills required in a variety of occupations, through two distinct programs at the high school level - Industrial Education 10, 20, 30 and Industrial Education 12, 22, 32.

FIGURE 7

Industrial Education Grades 7, 8, 9



Taken from: Junior High School Grades 7, 8, 9 Industrial Education Curriculum Guide, 1982

The Industrial Education 10, 20, 30 series of courses are taught in a multiple activity laboratory. These courses are of a general nature which place greater emphasis on awareness or familiarization and knowledge of basic concepts and psychomotor skills found in the content for the career fields of this program of study. The program of study is divided into the following four career fields: Electricity/Electronics, Computers; Materials; Power Technology; and Visual Communications. Each career field is further divided into modules. There are 56 modules for the four career fields. A module is considered as a unit of study which may range from 25 to 33 hours of study on a particular topic.

To create a course, combinations of modules can be arranged from the 56 modules that are available. Courses that are designed may be taught for 4 or 5 credits (100-125 hours). The Industrial Education 10, 20, 30 Materials Curriculum Guide (1982) in describing program organization states:

> The content for each module may range from 25-33 hours. Four modules of 33 hours each would provide the necessary time for a five-credit course. Four 25-hour modules would meet the time requirements for a four-credit course. (p. 6)

How these modules are selected and sequenced to make-up a course is left to the discretion of the teacher or to local authorities. The time-credit relationship of 25 hours of instructional time per credit is of paramount importance when modules are sequenced as a course. Instructional time includes time scheduled for student activities directly related to the course for which credit is given, i.e. instruction, examination, but not include staff meeting days, days used for professional development. Conventions or special activites are not counted in the instructional time.

Senior High School Industrial Education 12, 22, 32

The fourth phase of the Industrial Education Program at the secondary school level is the Preparation Phase. The Industrial Education 12, 22, 32, series of courses are designed to develop vocational competencies in selected trade areas and are used to prepare students with the skills, attitudes, knowledges, and understandings that will permit them to enter the world of work. These courses are taught in unit shops and are offered by teachers who have journeyman qualifications in apprenticeable trades or equivalent work experience in non-apprenticeable trades. The Industrial Education 12, 22, 32 series of courses are

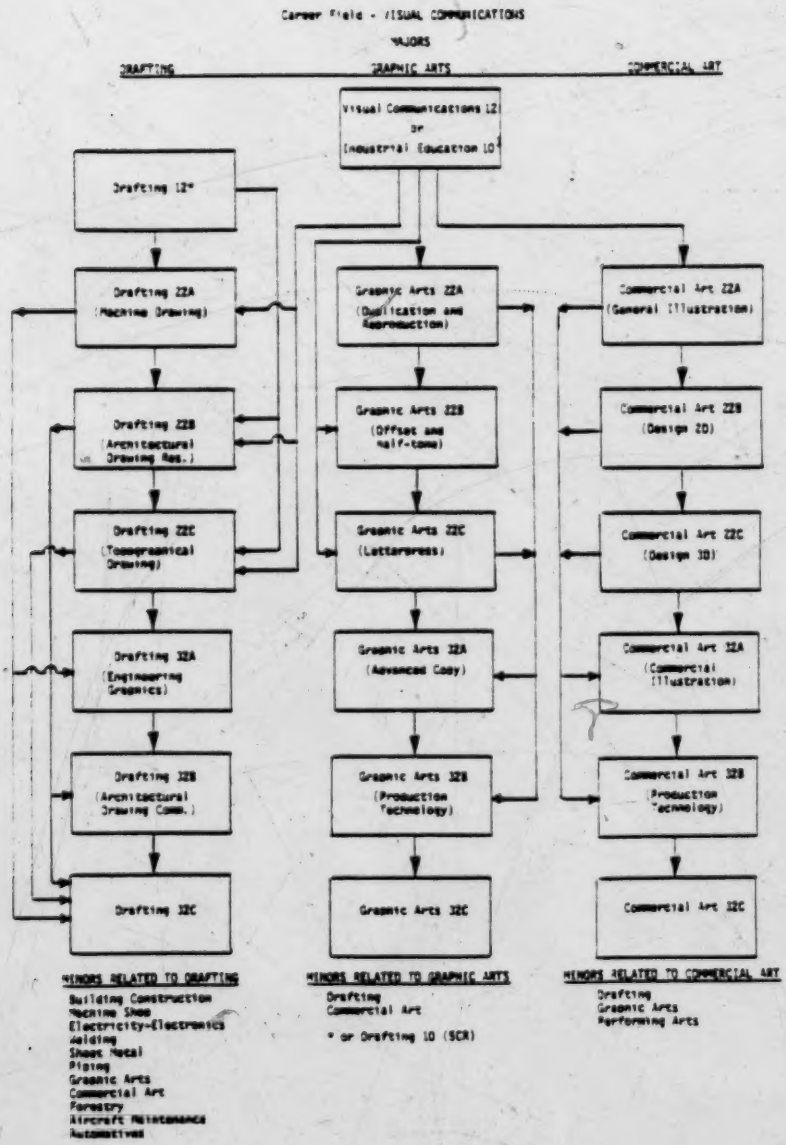
sequenced into six different career fields: Visual Communications; Mechanics; Construction and Fabrication; Electricity/Electronics; Personal Services; and Horticulture. A career field is a general term used to describe a group of related trade areas.

Each of the six career fields is subdivided into Industrial Education courses. For example the Career Field - Visual Communications is subdivided into the following courses: Drafting, Graphic Arts, and Commercial Art. Each course is further subdivided into modules. For the Drafting Course there are seven modules which include: Drafting 12; Drafting 22A, Machine Drawing; Drafting 22B, Architectural Drawing - Residence; Drafting 22C, Topographical Drawing; Drafting 33A, Engineering Graphics; Drafting 32B, Architectural Drawing - Commercial; and Drafting 32C. Figure 8 illustrates the modules for the three courses that comprise the Visual Communications Career Field. Other career field matrices can be found in Appendix II.

The length of time needed to complete a module as a unit of study requires 125 hours of 5 high school credits to complete. These courses on the "Industrial Education Matrix" are classified as career development courses which are designed to develop entry skills in the various occupational groups related to each Career Field. Entry into one of these six career fields may be through a related Industrial Education 10 program, or through the related Industrial Education 12 program. The Industrial Education 10, 20, 30 program is general in nature; for example, a student who registers in Industrial Education 10 may study several modules of content, including woods, metals, materials testing and machining. In Industrial Education however, 12, the student would select a specific area of study, machine shop, for example, and concentrate on that area. The student, once completing the required 10 or 12 level course, may proceed to take a major area of study in a 22 level course. This is done by registering in a number of modules worth 5 credits each, that are designated as "22" courses by local authorities who are responsible for the proper sequencing of modules.

Under Industrial Education 22 or 32, a student may be granted five credits under each of 22A, 22B, 22C, 32A,32B, 32C modules. To complete the entire 22 or 32 program, the student is required to take three modules for a total of 375 hours of instruction.

FIGURE 8



Taken from: Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators, 1974

Provincial Grants for Industrial Education Courses

Vocational grants are paid for industrial education courses that meet the following criteria:

1. including vocational major courses numbered 22, 32, 25, 35, and which may include major courses numbered 12 and 15,
2. which does not include courses commonly referred to as commercial electives or business education,
3. in which all courses are taught by teachers with approved trade qualifications, and
4. which is approved annually by a Department of Education Consultant for Industrial Education. (Alberta Education, 1979, p. 59)

Articulation with Apprenticeship Programs

There are a number of industrial education programs that articulate with an apprenticeship program that leads to journeyman certification. Among these programs are the following:

1. Building Construction and carpenter apprenticeship
2. Electricity and electrician apprenticeship
3. Pipe Trades and plumber apprenticeship
4. Pipe Trades and steam fitter apprenticeship
5. Auto Body and auto mechanics apprenticeship
6. Sheet Metal and sheet metal mechanic apprenticeship
7. Machine Shop and machinists apprenticeship
8. Electronics and radio technician apprenticeship
9. Electronics and communications electrician apprenticeship
10. Appliance Servicing and appliance service apprenticeship
11. Welding and welder apprenticeship
12. Food Preparation and cook apprenticeship
13. Beauty Culture and beautician apprenticeship (p. 24)

Reaction of Those Interviewed

Part of the research methodology for this study called for selected educational leaders in the province, who were involved with implementing vocational education, to be interviewed. To structure these interviews, an interview schedule was designed and used during each interview. Among the leaders who were involved in this phase of the research were:

Dr. J. D. Harder, Associate Director Curriculum, Industrial Education

Mr. R. H. Cunningham - Former High School Inpector Vocational Education

Dr. H. R. Ziel - Professor - Department of Industrial and Vocational Education

Dr. T. Byrne - Former Deputy Minister of Education

Dr. H. T. Coutts - Former Dean, Faculty of Education

Mr. G. Sanders - Former Supervisor of Vocational Education, Edmonton

Mr. J. F. Moffatt - Former Supervisor of Industrial Arts and Vocational Education, Edmonton Public School Board

Although the point may be coincidental, all of the interviewees agreed on one point: that the term "industrial education" had come onto the Alberta educational scene since 1968, about the same time that Dr. J. Harder returned from the United States, after having completed his doctoral program in education. At the time of this writing, Dr. Harder was Supervisor of Industrial Education for Alberta Education.

When interviewed, Harder suggested that the request for the change came from in-service teachers, through the Curriculum Coordinating Committee. "They (the Curriculum Coordinating Committee) felt that an umbrella term like industrial education would make it easier for everyone to know what we were talking about" (Harder interview, 1979 03 12). The two programs, vocational education and industrial arts, were interrelated, each having its own objectives, servicing different students, but combining to contribute to the overall goals of education. According to Harder, "we have heard very little from the field about the name change."

In an interview with Mr. R. H. Cunningham, "the term is very confusing, although they are supportive of each other." (Cunningham interview, 1979 03 26) When asked if the name change had lead to an articulated program from Kindergarten to Grade XII, Cunningham felt it had, and this feeling was expressed by all of the interviewees. None of the persons interviewed felt that the name change was detriminental to the program, and, in fact, most felt that industrial education bolstered the Industrial Education 10, 20, 30 program at the high school, but detracted from the Industrial Education 12, 22, 32 program.

Except for Harder, feelings regarding the change to a general term were similar in all cases:

> the change was probably a result of Dr. Harder's doctoral program. I'm pretty sure that he did not make any change until after 1971. (Byrne interview, 1979 03 26)

The interviewees agreed on yet another point: that of the students choosing industrial education courses the semantics make no difference.

As for further changes in the future, Cunningham stated that "I don't see it changing very much. The pattern is set." Harder shared the same sentiment: "I don't see any major shifts from the current philosophy."

Not all of the reactions to the change in terminology was positive, however. In a speech entitled "Can the Modular System Solve the Problems of Technical-Vocational Education in Alberta" prepared by J. D. Ritter, Edmonton Separate School Board, in May 1973, stated that:

> the modular system has a place in some schools; but as an alternative to where vocational programs can not succeed (p. 7) . . . are we now going to destroy this advantage (of the present vocational program) and revert once again to a system of modules, mini-modules; a tight structured curriculum and an irrational system of prerequisites? Flexibility exists on the individual, not the curriculum!." (p. 14).

SUMMARY

Previous chapters of this study documented the development of industrial arts and vocational education in Alberta, which served as a background in developing this chapter. The major thrust of this research was to describe the evolution of the industrial education concept in this province which was also the objective of this chapter.

The professional literature documents the fact that use of the term industrial education can be traced to 1876 in the United States. The term industrial education first appeared in Alberta in the 1954 Annual Report of the Department of Education. This term briefly reappeared in 1963 as the title of a newsletter, Industrial Education Newsletter. However, the term disappeared for a few years but resurfaced in 1969, when Harder returned from educational leave and became High School Inspector of Industrial Education. The concept of industrial education continually gained momentum through the years 1969 to 1972 under the direction of Harder.

To justify the need for reorganization Harder prepared and released a position paper "A Rationale for Industrial Education" to various stakeholder groups throughout the province. This position paper provided the philosophical

base for future program development and for developing the Industrial Education Matrix that would structure Industrial Education.

Early in the 1969-70 school year Harder held discussions with vocational education teachers to discuss problems related to vocational education. From the five problems that were identified an Administrators' Seminar was called by the Department of Education. At this seminar twelve topics relating to Vocational Education were thoroughly discussed.

During the 1968-69 school year the Industrial Education Committee was appointed. This Committee was a Standing Committee to which an Ad Hoc Committee reported. Later the Industrial Education Ad Hoc Commitee was formed to develop a model upon which an evaluation could be structured. Closely related to this Committee was the Evaluation Ad Hoc Committee which had the responsibility for the detailed planning of the evaluation scheme.

Another Committee that was established was the Industrial Education Structure Ad Hoc Committee which was to develop a structure that organized industrial arts and vocational education under the rubric of Industrial Education. This Committee designed and organized the Industrial Education Matrix.

From 1970 to 1972, two experimental industrial education programs were piloted in four Alberta schools. No formal report was ever made, however, on the results of these two experimental programs. At the Red Deer Seminar, Harder reported that the industrial education program was enjoying success in all four schools that had piloted the experimental programs.

At this same seminar, Harder also presented the Industrial Education Matrix, which illustrated the complete industrial education program in graphic form. Harder used the matrix to support "A Proposal for Industrial Education in the Seventies". A list of definitions for the terms on the matrix was also included when the matrix was presented. The matrix became the basis upon which the industrial education program is organized.

An important aspect of the industrial education marix and program is the Work Experience Education Program. Work Experience Education is a course governed and administrated by several provincial bodies, including: Alberta Education; the Board of Industrial Relations; the Apprenticeship Board; and Workers' Compensation. It is a course with credits granted whereby students study the world of work at work stations in the community.

To assist those who would be involved with Industrial Education the Department of Education published a Handbook in Industrial Education for Guidance to Teachers, Counsellors, and Administrators. The definition for Industrial Education in the 1982 issue of this publication is:

Industrial Education is a program consisting of coursed that provide a continuum of experiences, starting with exploratory experience and activities in the elementary and junior high school, expanding in the high school to the development or skills in career fields, and culminating in on-the-job experience.

Included in this publication is the paradigm for the Alberta Industrial Education Program.

This paradigm shows that the implementation of industrial education begins in the Elemenatry school with the Familiarization Phase. This phase proceeds to the Exploration Phase in Grades VII; VIII and IX, as industrial education which is taught in a multiple activity laboratory. In the Exploration Phase there are four fields of study that are subdivided into 15 modules which take a student between 15 to 25 hours to complete. The Orientation Phase of the program is offered at the senior high school level as Industrial Education 10, 20, 30, with content in four career fields. In these four fields there are 56 modules that can be used by local authorities to build a course. Each module can be completed in 25 to 33 hours of study. Courses can be taught for 4 or 5 credits.

Students who complete the appropriate Industrial Education 10 or 12 course may proceed to an Industrial Education 22 or 32 level course. These courses make up the Preparation Phase of the paradigm and are taught in a unit shop by teachers with an extensive industrial background.

CHAPTER V

SUMMARY, CONCLUSIONS, OBSERVATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Introduction

The major purpose of this study was to describe the evolution and development of the Industrial Education concept from 1968 to 1982. In order to accomplish this purpose the study, in essence, was divided into three major sections: (1) Vocational Education; (2) Industrial Arts; and (3) Industrial Education. The researcher, in providing this information wanted to reveal the relationship that existed between the two complementary educational programs of Vocational Education and Industrial Arts and why the Industrial Education concept was imposed in Alberta. Post Secondary Education programs that leading authorities include in their definitions of industrial education, i.e., technical education, apprenticeship training, on-the-job training, were beyond the scope of the study.

To support this purpose the study had a number of supporting objectives were established that included: to determine the role that personnel from the Curriculum Branch of Alberta Education had on imposing the industrial education concept on the education structure of the province; to show the influence that the industrial education concept had on the time allotted to vocational education programs in the high schools of the province, as well as on the industrial arts programs at both the junior high school and senior high school levels; to determine the influence that the industrial education concept has had on curriculum design and development for both vocational education and industrial arts; and to identify the various influences which led vocational education and industrial arts teachers to accept and adopt the industrial education concept in Alberta.

SIGNIFICANCE OF THE STUDY

With the completion of this study the resource gap that existed in the previous literature no longer exists. Since much of the available literature on this topic has been synthesized in this thesis, it is now possible for other researchers, scholars, and students to have this information available to them in a single source when they investigate how the Industrial Education concept evolved in this province.

Another significance of the completed study is that those researchers interested in curriculum design for secondary school industrial education now have available to them a source which discusses this concept and its impact on time and credits as well as on the structure of education in Alberta. These individuals will also find that the two programs, vocational education and industrial arts, were some of the first to be modularized. Modularization of curriculum context normally, is the first step in the personalization or individualization of instruction.

METHODOLOGY

The method of collecting data and information for this study was mainly bibliographical, which included reviewing and analyzing both primary and secondary sources found in libraries in the province. Resource materials that were either stacked or in the archival collections of these libraries were reviewed and included: minutes and other records from Alberta Education, the Industrial Arts Newsletter and the Industrial Education Newsletter, the Handbook in Industrial Education for Guidance to Teachers, Counsellors and Administrators and Work Experience Education all publications of Alberta Education; minutes and newsletters from the Industrial and Vocation Education Specialist Council as well as the Industrial Education Specialist Council of the Alberta Teachers' Association; publications of the federal government such as those published by Statistics Canada, and the Canadian Vocational Association Journal, the Canadian Journal of Education and Education Canada.

Verification of information found in both primary and secondary sources was accomplished by interviewing selected leaders in the province who were in leadership positions when vocational education became part of the structure of secondary education. These individuals also saw the industrial education concept evolve in Alberta. To structure these interviews an interview schedule was designed and piloted.

Information and data collected from the primary and secondary sources as well as from the interviews were used to prepare the content of this report.

CONCLUSIONS

Some form of practical education has always been a concern of personnel of the Department of Education in Alberta. The first form of practical education in the province was Manual Training which was followed in-turn by Pre-vocational Education, Manual Arts, Technical Education, General Shop, Technical Electives, Industrial Arts, Vocational Education, and Industrial Education. This form of education was used to provide students with entry level skills for the world of work and to prevent these students from becoming early school leavers. A perennial problem that educational administrators had to face was the lack of qualified teachers who could teach these practical subjects.

Demographically, as the population of the province continued to grow through immigration, so did the enrolments, the physical facilities, and teaching force for practical subjects.

One of the first programs of vocational education to be offered in Alberta was Agriculture Education. It was a viable program in the secondary school which began began in 1910. The purposes for including this form of education in the high school were to create a set of health giving principles, a positive viewpoint concerning country life, the recognition of virtues imminent in the work of the soil, and the acknowledgement and application of man's power over nature.

Educational historians considered this innovation a failure because of both natural and man influenced causes; by the late 1920's most farmers' political organizations were in a decline; provincial and federal departments of agriculture and the colleges and schools of agriculture moved the science of agriculture beyond the understanding of the average teacher who taught agriculture, and teachers who taught agriculture were often transient and ill-prepared to teach gardening (agriculture) to their students.

The United Farmers of Alberta were the dominant political party in the province from 1921 to 1935, a period of fourteen years. While in office, this political party imparted flexibility to the curriculum by establishing six programs of study that included: General, Normal Entrance, Agricultural, Commercial, Technical, and University Matriculation. Also established, was the standard of twenty-one units that were needed for completion of secondary school. A unit was defined as the amount of material the average pupil could acquire efficiently from 175 to 200 minutes per week during the school year.

Agriculture Education as a program of study was removed from the schools in 1913 and was re-introduced in 1940. When this program was re-introduced it was on an experimental basis and was taught at Brooks. This program was categorized as an option by the Department of Education. One of the major shortcomings of this experiment was the difficulty in securing a qualified teacher to teach the course. Attempts by the Department of Education to promote either Plant Science I and II, or Animal Science I and II among rural youth, did not meet with the success anticipated. Divisional School Boards throughout the province were reluctant to offer these courses because of low enrollment, the costs of buildings, furniture and equipment.

In 1952-53 the Department of Education introduced Agriculture 10 as a technical elective and Agriculture 20, 30, and 21 as general electives. These courses did not receive student support because they were limited in scope and they did not contain the practical content to serve the needs of the rural students. Farm and Home Mechanics 10, in 1972, were retitled Related Mechanics and were placed under the Mechanics Career Field. Related Mechanics was divided into the following five non-sequential modules: Power Systems, Carpentry, Wiring, Machine Shop, Welding and Related Mechanics. With the exception of Related Mechanics these modules can be taken in any order.

The British North America Act considers education a provincial right. Through Federal Legislation, funds were made available to the provinces to support Agriculture Education but not Industrial Arts Education. Alberta, as well as the rest of the provinces, has always taken advantage of the funds and benefits of this legislation. From 1912 to 1960, there were nine Federal enactments that provided funds for practical education. The more significant of these acts were: The Agriculture Instruction Act, 1913, which helped to provide financial support for agriculture schools at Claresholm, Olds, and Vermilion; the Technical Education Act, 1919, which established the cost-share principle with the provinces; and the Technical and Vocational Training Assistance Act, 1960, which established secondary school Vocational Education and helped to democratize Canadian Education.

The large population centres in the province could be considered as the innovators of industrial arts or vocational education because they were the first to incorporate these courses into their offerings. Some of the smaller centres followed suit. Those centres that did not, found this form of education expensive;

they did not have the physical facilities to house the program and they did not have the finances to support this capital intensive program. It was found that when financial times were good practical subjects flourished. Conversely, when financial times were poor, the program suffered temporary set-backs.

Since 1914, when a Director of Technical Education was appointed, industrial arts has always had a Supervisor at the Department of Education. It was not until 1960 when a Director of Vocational Education was appointed. Of all the supervisory personnel concerned with industrial arts or vocational education only one received an advanced degree from a university in Alberta.

Two of the most significant innovations in education that had an impact on the educational structure of the province, were the implementation of the Junior High School Concept during the 1936-37 school year. This concept placed Grades VII, VIII, and IX between the elementary and the senior high grades. The second innovation was the adoption of the credit system. Under the credit system, high school diplomas were available to students earning a minimum of one hundred credits. A credit represented the completion of 35 minutes of instructional time per week. One hundred credits were required to take a core program of English, Social Studies, Health and Physical Education and certain electives. Under the credit system, Calgary brought the first composite high school, Western Canada Composite High, on stream.

Industrial arts continued to grow until the war years, when growth was slowed because of the high cost of equipment and supplies, the availability of equipment on the educational market, and the availability of teachers with the necessary qualification to teach this subject.

The industrial arts program continued to gain popularity, and in 1962, some 30,488 students were registered in industrial arts. These students were taught by 287 teachers in 311 operating shops. There were a number of shops in the province that remained closed because of the lack of qualified teachers.

The most significant development in contemporary industrial arts in the province occurred with the appointment of Dr. H. R. Ziel as the head of the Division of Vocational Education at the University of Alberta in 1962. Originally the Division was established to train vocational education teachers, but its mandate was later expanded to provide training for industrial arts teachers as well. Although the teacher education program was not part of the scope of this study, Ziel made a decided contribution to the redesigning of the industrial arts

program of studies for Alberta. He proposed a four phase program for presenting the context of industrial arts which would be taken from the materials an technologies of a productive society. This program later came to be known as the Alberta Plan and was implemented on a pilot basis at Hillcrest Junior High School by the Edmonton Public School Board.

In 1964 J. D. Harder was appointed supervisor of industrial arts for the province. During that school year he spent much of his time travelling throughout Alberta, evaluating the industrial arts program which was taught in unit shops and involved only a limited number of materials. From that review Harder recommended that the Alberta Plan be accepted by the Department of Education as the organizational pattern for the learning environment for industrial arts.

Following the signing of the Technical and Vocational Training Assistance Agreement in 1961 between Alberta and Ottawa the province was quick to assign committees to design curricula that would be implemented as soon as the necessary facilities became available. To accomplish this task a Sub-Committee of vocational education teachers was established to write curriculum guides. The guides that were prepared had to be acceptable to the Department of Education, the Apprenticeship Branch, the Technical Institutes, and the Federal Government. The courses that were designed were to have a five credit value at the Grade X level, and a value of twenty credits at the Grade XI and XII level. The courses that were developed were given the numeric designators "12", "22", and "32".

By January 1963 these Sub-Committees had prepared curriculum guides for eleven different vocational education courses at the 12, 22, 32 levels for which credits would be granted. The question of granting credit for locally developed courses a mild conflict between the Chairman of the Technical-Vocational Committee for the Senior High School and the Central Office Administrators of the Calgary Public School Board. That conflict was resolved by the Director of Curriculum who recommended that tentative credit be given to students who successfully completed course requirement for "15" level courses in Grade X. Locally developed courses in Alberta can be identified by the numeric designators "15", "25", and "35".

The number of vocational education facilities grew drastically between 1963 and 1982. In 1963 there were eighteen schools that offered a vocational

education program of study. Approximately twenty years later, in 1982, the number of schools offering that program had increased to fifty-five

A major revision of both the vocational education and industrial arts programs took place between 1969 and 1974 when the industrial education concept was put in place. This transition began in 1969 when Harder returned from educational leave. Following his leave Harder prepared a position paper, "A Rationale for Industrial Education", that would amalgamate vocational education and industrial arts under the rubric of industrial education. Accompanying the Rationale was the Industrial Education Matrix that placed the twenty-one vocational education courses into seven career fields. An integral part of the matrix was the Work Experience Education Program. This program included Work Study and Work Experience. Students enrolled in the latter course would receive credit for work experience to a maximum of ten credits. Work experience is considered a locally developed course and has the numeric descriptors "25" and "35".

Industrial education is a continuous program which begins in the elementary grades at the Familiarization Phase, and culminating in on-the-job experience at the Occupational Phase. At the Familiarization Phase, Kindergarten through Grade VI, industrial education is a strategy of teaching known as "Integrated Practical Activites" (IPA). IPA is a strategy, there is no curriculum, nor is there any specific content. The IPA program involves any activity in which a student is required to construct, plan or use tools. IPA is a "learn by doing" method of teaching. It is also an attempt to reinforce other academic disciplines of study and to relate these disciplines to each other. With the exception of in-service programs and workshops, teachers for the IPA program are not specifically qualified to teach in this subject area.

The second phase of the industrial education program commences at the junior high level, Grades VII to IX. This phase is known as the Exploratory Phase, and provides students with an overview of several material and technology areas. Here again, as is the case throughout the entire industrial education program, emphasis is on a "hands on" approach to education.

The learning environment where these courses are taught is organized in multiple activity laboratories, which is an organizational device through which a variety of technology-based, exploratory experiences, can be presented in a minimum of space with a minimum of equipment. The physical plant is organized

into a number of different areas that represent the modules of the four fields of study. Each area is as self-contained as possible to minimize inter area traffic. In each area provision is made for storage of materials, student products, and both hand and power tools. These areas are designed to accommodate between four and six students.

The four fields of study, Materials, Power, Graphic Communications, and Synthesizing are further divided into fifteen modules. Each of these modules requires between fifteen to twenty-five hours of study. The Department of Education recommends that a student study a minimum of three different modules in each year of junior high school. At the junior high school level the student normally spends seventy-five hours per year in industrial education or an average of two hundred and twenty-five hours over the three years of junior high school. Industrial education at the junior high level is categorized as a Group A Option and curriculum guides are provided by the Department of Education.

Once a student enters high school, Grades X through XII, he/she may follow one of two routes. The first route is a continuation of the general industrial education program, and is the Career Orientation Phase. The courses for this program are general in nature, and are designated as Industrial Education 10, 20, and 30. These courses were designed primarily for students in facilities that are organized as multiple activity laboratories, but can be taught in unit shops as well. Courses designated Industrial Education 10 or 20 are weighted as 4 or 5 credit courses depending on whether they are taught for twenty-five or thirty-three hours. Industrial Education courses at the 30 level are 5 credit courses.

The Industrial Education 10, 20, 30 series of courses consists of fifty-six modules that are related to four career fields: Power, Materials, Visual Communications, and Electricity-Electronics-Computer. Courses are made-up of modules and the clustering of these modules is a local decision. Each module has a minimum of twenty-five hours of content and may be expanded to thirty-three hours. These courses are taught by a generalist, an industrial arts teacher, and no special grants are given by the Department of Education for these courses.

The second route of industrial education at the senior high school level is the Career Preparation Phase which is more job specific. This phase of the program provides the student with job entry skills for a selected occupation found in the world of work. The Career Preparation Phase consists of the Industrial Education 12, 22, 32 series of courses. These particular courses are

planned for use in schools where facilities are available to teach a specific occupation, i.e. carpentry; facilities that were built with cost-shared funds of the Technical Vocational Training Assistance Agreement.

It is possible for a student to progress from the 10, 20, 30 series of courses to the 22 level by meeting specific basic requirements or upon the recommendation of the school principal. For example, two modules from Industrial Education 10, 20, 30 or from Industrial Education 12 taught for a total of 65 hours will serve as a prerequisite for the appropriate 22 level course.

The 12, 22, 32 level courses consist of five credit modules of specific occupational content. When a student completes seven five credit modules, or 35 credits, the student can become qualified for recognition by the Apprenticeship Branch for credit towards a journeyman's certificate.

Students registered in a "22" or "32" level course are considered as taking a major in that course specialization. Once a major is established the student may select courses from the Industrial Education Matrix designated as minors. Major and minor modules are available in each career field to make it possible to increase the options for the students. The Matrix indicates that a student may select courses from the Industrial Education 10, 20, 30 series, Business Education, Home Economics and/or Work Experience to supplement courses in any of the following six Career Fields: Graphic Communications, Mechanics, Construction and Fabrication, Electricity/Electronics, Personal Services, and Horticulture. Each Career Field is divided into major the Mechanics Career Field includes the industrial education of Automotives, Related Mechanics, and Auto Body. These majors are then sub-divided into modules -22A, 22B, 22C, and 32A, 32B, and 32C. With the exception of Beauty Culture, Food Preparation, and Health Services each a major subject has the equivalent of 35-40 credits available in six 5-credit and one 5 or 10 credit block.

Courses offered at the 22 and32 level must be taught by a teacher with journeyman certification or its equivalent and must be taught in approved facilities to qualify the students for vocational education grants.

OBSERVATIONS

Most of the observations that are associated with this study have to deal with the sources that were used to collect data for analysis. Below are some of the observations that were made by the researcher.

During the data collecting phase of the study it was observed that the Annual Reports of the Department of Education from 1906 to 1968 were descriptive of the educational scene and included significant detail concerning educational problems, trends, and issues. From an in-depth analysis of these primary sources it was found that educational leaders in the province were most concerned with providing learners with some form of practical education. An education that would serve two purposes: (1) retain the student in school for a longer period of time, thus preventing early school leavers and (2) provide the learner with entry skills for the world of work.

One of the major lines of communication between the Department of Education and in-service teachers of practical subjects has been a newsletter, either the Industrial Arts Newsletter or the Industrial Education Newsletter. It was observed that under normal circumstances only three Newsletters during any one school year were published by the Department of Education. When the industrial education concept became an educational issue, however, the number of newsletters increased to four per year from 1969 to 1979. Without these newsletters and the information contained therein, the information contained in this report would not have been possible to obtain.

Related to this observation is the fact that although the Department of Education did publish a newsletter for industrial arts teachers it has never had such a publication for vocational education teachers. There are approximately 450 practising vocational teachers in the province with a similar number of industrial arts teachers.

The federal government for fifty-four years has contributed cost-shared funds to the provinces for the development of Agriculture Education, Technical Education, and Vocational Education with none of these funds allocated to support Industrial Arts. This financial assistance has been effective in stimulating and encouraging the growth of these three forms of education in the province. The number of technical institutes in the province increased from one in 1961 to three in 1983. The most recent technical institute to open was Westerra, which opened in 1982. In 1968 there were 35 composite high schools in the province that had either a vocational wing or shops where vocational education courses were taught. In 1982, this number had increased to 55 such schools, or a growth rate of about 157 per cent. It was evident that the "seed money" provided by the federal government through a number of legislative

enactments provided the impetus for the development and expansion of vocational and technical education in Alberta.

While conducting the research for this study, the writer was able to consult a number of resources, both published and human. One of the most valuable published resources was the Alberta Education publication, The Industrial Education Newsletter. This publication documented the various changes that took place in the industrial education program, as well as providing definitions for various terms that were used by personnel of Alberta Education. Authors completing research on industrial education would be well advised to consult the newsletters for their wealth of information.

Even more helpful to the researcher were the human resources that were consulted throughout the various phases of completing this study. Librarians and archivists of the various libraries and repositories that were contacted proved to be exceptionally helpful in the various stages of this study. Government officials at both the provincial and federal levels were able to direct the researcher to other sources of information, even if they were not able to provide it directly. In all cases, the requests for information were answered quickly and efficiently.

Alberta Education personnel were invaluable in providing the researcher with relevant information. As most of these officials had experienced the evolution of industrial education as described in this study, they were able to provide a wealth of information for the researcher. These officials had, at their fingertips, statistics, reports and other such information available to the writer of this study. In addition, these officials of Alberta Education were all very positive about the future of industrial education and the ability of this program to meet the educational requirements of a modern Alberta. Whenever the researcher required statistics or information, a telephone call was sufficient to obtain the information, or direction to a source of the information.

Another group of people who proved to be knowledgeable and helpful were those persons who consented to be interviewed. Once again, these persons had been through the change from specific programs to umbrella programs. Their comments and observations provided a valuable point of view for this study. It is interesting to note that the persons who were interviewed, and were not Alberta Education personnel, were not as positive about the future of the industrial education program as were the personnel of Alberta Education.

Other human resources that proved to be worthwhile contacting were those who had the foresight to collect relevant information about the development of industrial education. Especially dedicted to this cause was the supervisor of this study, and the author recommends to anyone conducting an historical survey of industrial education in Alberta, that this person be contacted.

RECOMMENDATIONS FOR FURTHER RESEARCH

An analysis of the bibliography of this thesis will show that a number of researchers have completed studies on different phases of industrial arts and vocational education. Most of these investigations are time-referenced, that is, they made no attempt to trace either the history of industrial arts or vocational education from the beginning, but start at a given point. Although these studies have contributed to the literature, they have fragmented the history of these two complementary subject areas.

As a recommendation for further study the writer of this report suggests that a history of industrial arts education in Alberta be undertaken, as this form of education seems to be in a constant state of flux.

Related to this recommendation is that a history of vocational education be completed that would include a detailed analysis of the teacher education programs at the University of Alberta.

Although the University of Alberta was the first university in Canada to offer a baccalaureate in industrial arts and vocational education, and more recently a Masters Degree program, the library holdings of the university do not reflect that history.

It is recommended that the Department of Industrial and Vocational Education take the initiative and aggressively pursue developing a library devoted to publications on the philosophy and history of Industrial Arts, Vocational Education, and Technical Education. The proposed library should be modelled after the library found in the Department of Educational Foundations , Faculty of Education, of the University of Alberta.

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APPENDIX I

In this Appendix is a copy of the Interview Schedule that was used to structure interviews with selected leaders in the province. Also included in this Appendix is a list of the names of those leaders who participated in the interview.

INTERVIEW SCHEDULE

As you are probably aware, many changes have taken place in the fields of Industrial and Vocational Education over the last eleven years. A trend has taken the two separate entities of Vocational/Technical Education and Industrial Arts and combined them under one title now known as Industrial Education. It is the goal of this interview to identify the reasons for this change.

1. What do you feel are the major changes that have occurred over the last eleven years (1968-1979)?

2. How do you feel the shift from the two separate entities of Vocational/Technical Education and Industrial Arts to Industrial Education has been received?

3. Why was this shift from the two separate entities made?

4. Why was this shift from Vocational/Technical Education to Industrial Education made?

5. Do you feel that this shift has lead to an articulated program from K through to Grade XII?

6. What do you suppose initiated this change from the two separate entities to Industrial Education?

7. Was this shift of any benefit to the students?

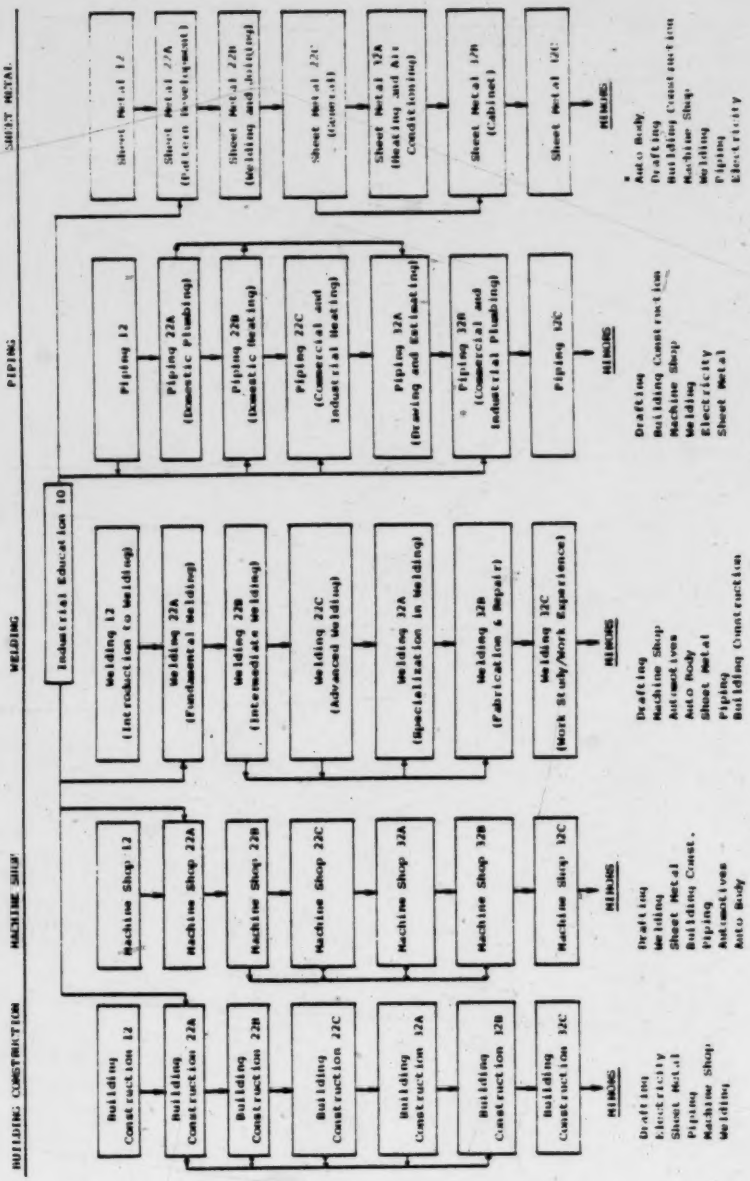
8. What direction do you see Industrial Education going in the future?

The following is a list of the educational leaders who were selected to be interviewed:

Dr. T. Byrne
Mr. R. Cunningham
Mr. J. Moffatt
Dr. H. Coutts
Dr. J. Harder
Mr. G. Sanders

APPENDIX II

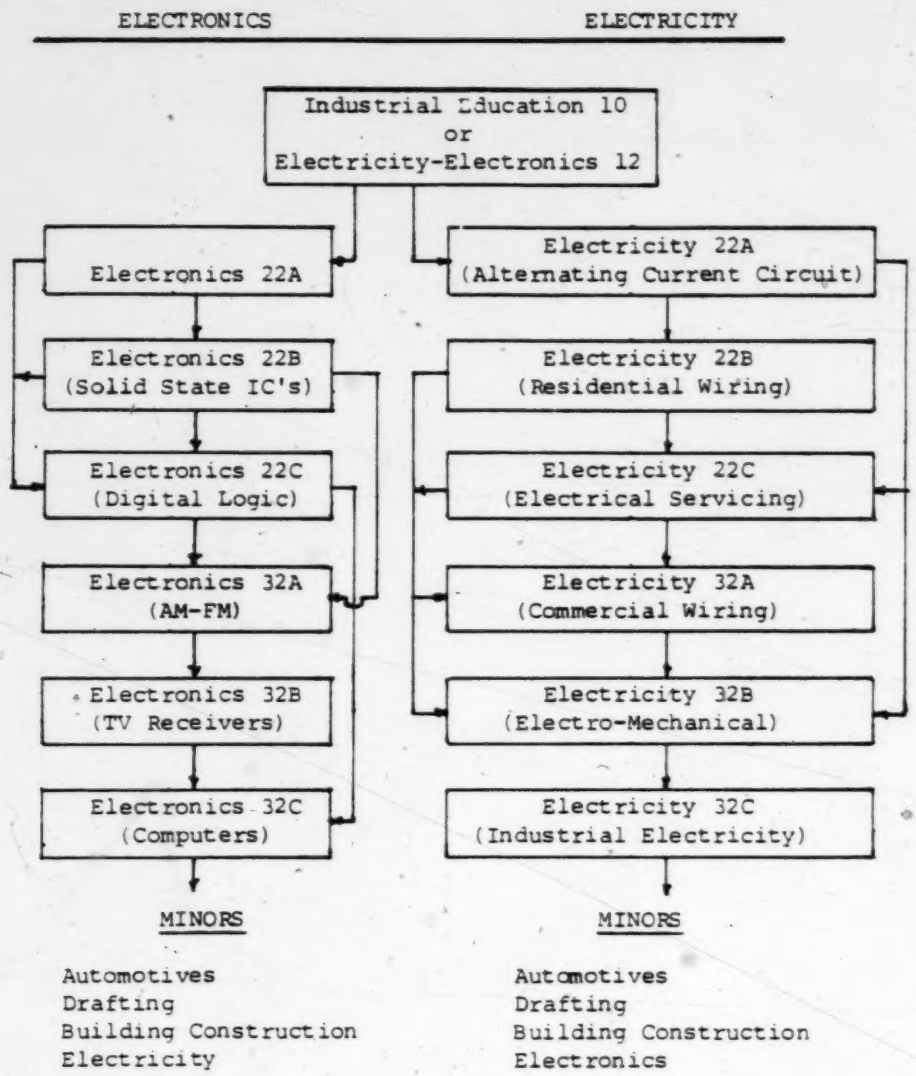
In this Appendix are the Career Field Charts for the seven Career Fields and the twenty-two Vocational Education Courses that are part of the Structure of Secondary Education.



Taken from Industrial Education Manual for guidance to teachers, counsellors and administrators; Alberta Education; 1983.

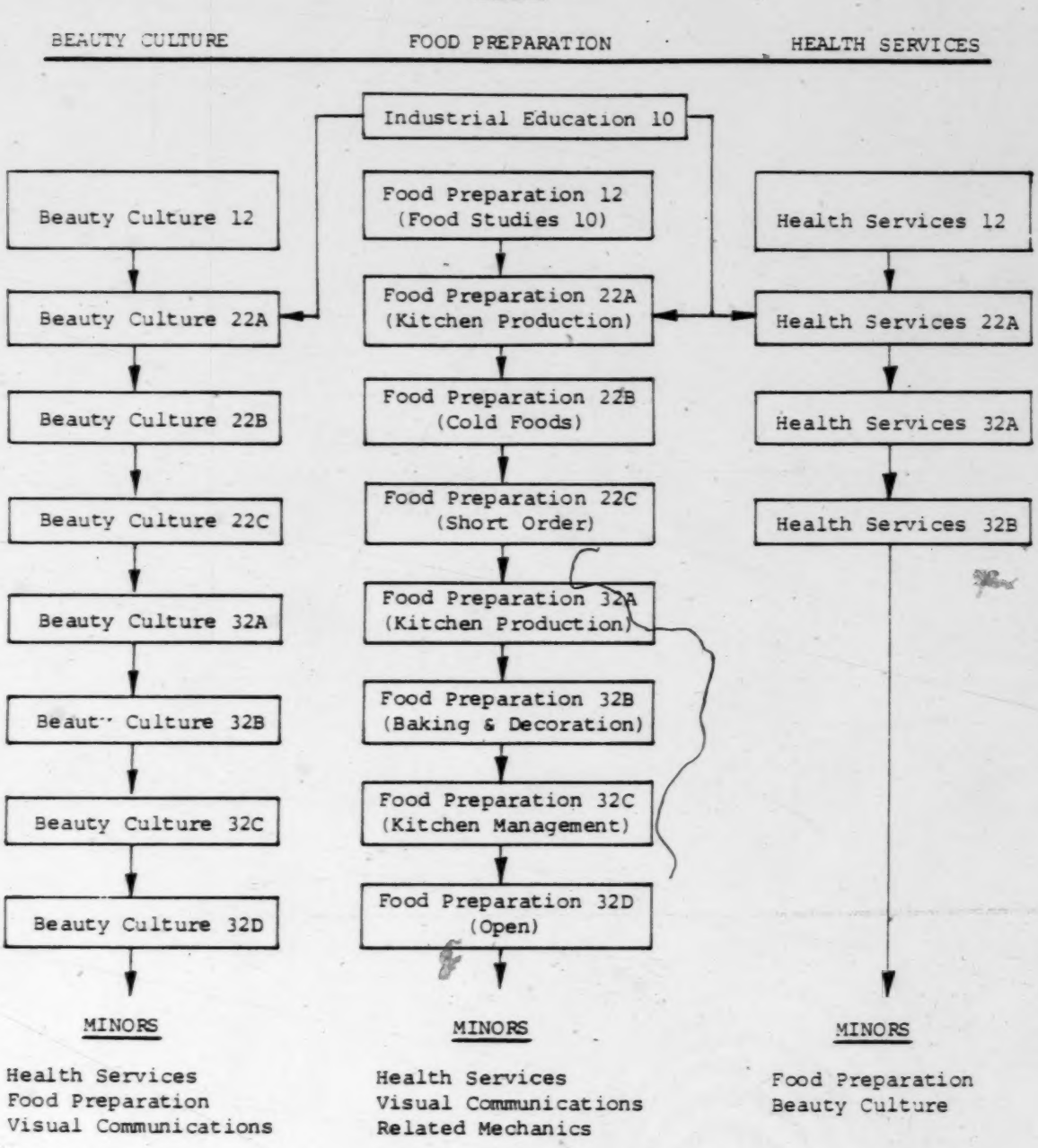
Career Field - ELECTRICITY-ELECTRONICS

MAJORS



Taken from Industrial Education Manual for guidance to teachers, counsellors and administrators; Alberta Education; 1983.

Career Field - PERSONAL SERVICES



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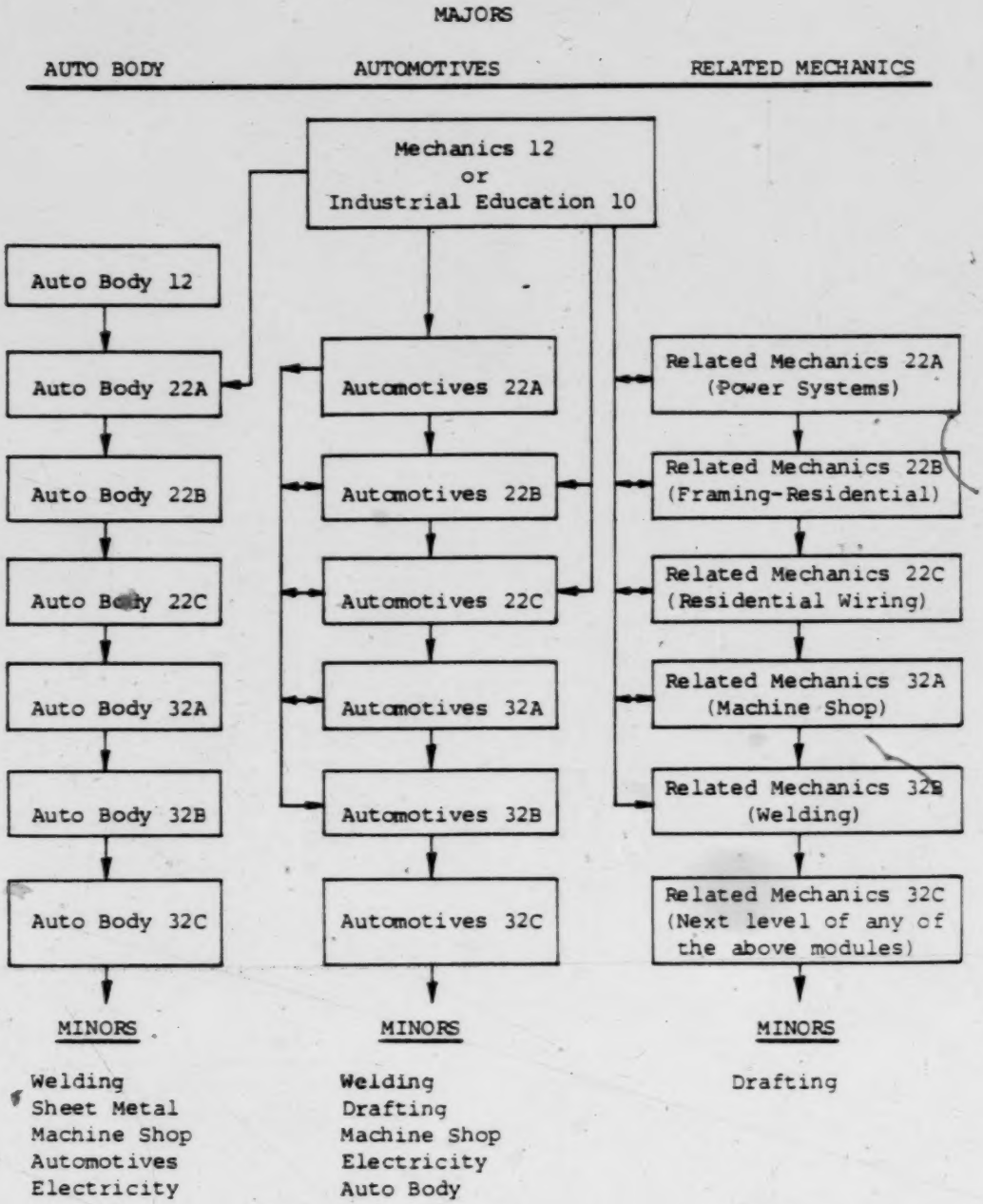
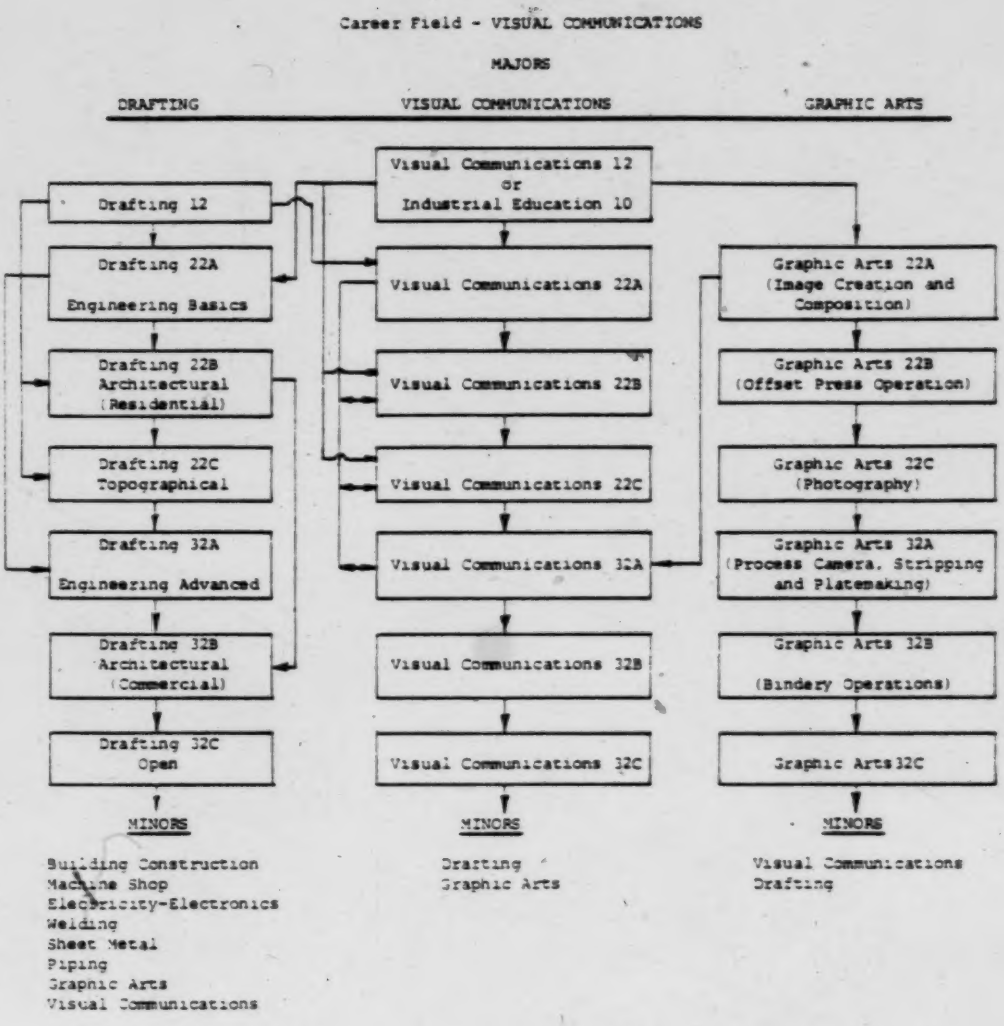
Career Field - MECHANICS



Taken from Industrial Education Manual for guidance to teachers, counsellors and administrators; Alberta Education; 1983.

Career Field - VISUAL COMMUNICATIONS



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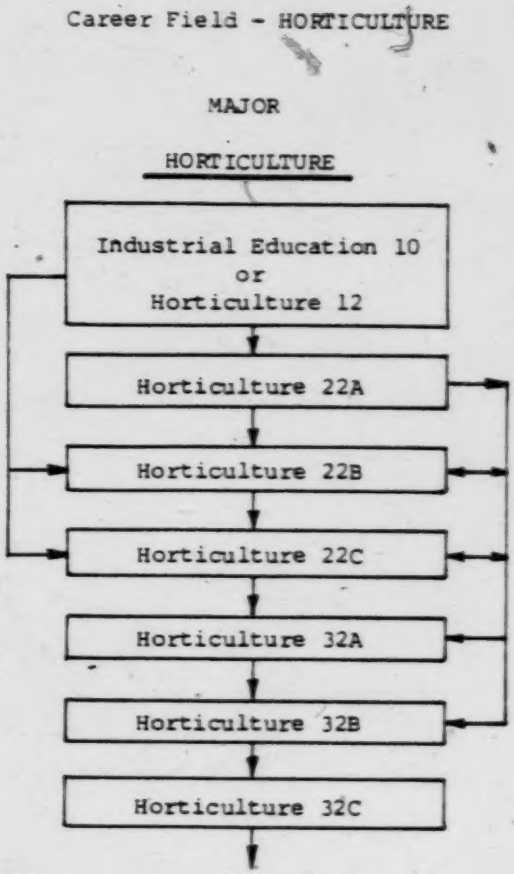
Career Field - HORTICULTURE



Drafting
Automotives
Building Construction
Related Mechanics
Electricity
Piping

Taken from Industrial Education Manual for guidance to teachers, counsellors and administrators; Alberta Education; 1983.

APPENDIX III

This Appendix includes a true and accurate copy of the "Rationale for Industrial Education" that was received by Dean Coutts and subsequently forwarded to the Department of Industrial and Vocational Education.

A RATIONALE FOR INDUSTRIAL EDUCATION

Introduction

The decade of the sixties saw the birth and development of a vocational education program in the Province of Alberta, the scope of which could not have been imagined before the passing of the Federal Provincial Technical and Vocational Agreement in 1961. The generous support provided by the Federal Government was readily accepted by the school boards for the construction, equipping and staffing of many composite high schools. The Federal Government, no doubt, made its choice to pump such vast sums of money into the public school system on the basis of two alternatives. First, there was practically atotal lack of such programs in the schools and it was necessary to initiate these high cost per student offerings, for the purpose of providing a basis for an expanding economy with its demands for a qualified work force. The other alternative was to continue to spend an increasing amount on welfare to sustain an idle population, with it debilitating effects on the economy.

Alberta, with no previous tradition of vocational education, other than business education, developed its own concepts for a program that would meet the requirements of the Federal legislation. Many courses were implemented that had accreditation with the Technical Institutes and the Apprenticeship Board. In addition to those courses directly articulated, there were a number that led directly into occupational areas. Additional training could be obtained on the job.

While the initial stages of the program were to provide basic skills, the courses tended to become "Specific trade" oriented. The move in this direction required a large amount of time for the development of skills, greatly reducing the flexibility of an individual student's program. They also required academic prerequisites which were often not coordinated with the needs of the vocational courses. Furthermore, the equipping and maintaining of the shops to provide the degree of specialization anticipate became costly. As a result, many schools found it difficult to enrol students in the higher level courses and the costs for small classes were causing concern to school boards. Members of the Department of Education observed what was happening, recognized the need for modifications as suggested by several committee meetings, and recommendd that the programming for vocational courses should be made more flexible and should concentrate on the fundamentals of skill development within the context of general education.

A Rationale

Education for living in a world where knowledge is expanding at exponential rates requires a new approach. Firstly, the span of the educational program is rapidly reaching the total life of a man. Education is going to be available, in a planned sense, from nine months to ninety years of age.

Secondly, our approach to knowledge acquirement is changing. No longer can we pass on only the knowledge and culture we lived through. Now students must be helped to learn the trade, how to learn, to conduct inquiry, to study independently, to make choices and decisions, to use technology and to live with change.

The new knowledge we obtain must be used for the welfare of the people. Our emphasis on producing goods and services, making more money, and building better machines need not persist. Our primary goals must change if mankind is to survive. Knowledge must be chanelled to developing better people, better systems of living, and to making life more fulfilling and requarding.

To achieve these goals our educational system must recognize the needs of all the people in the society. Resources must be expended to minister to these needs. In the secondary school, student diagnosis for purposes of course selection must include what he knows, what he wants to know and how he learns. Accordingly, the learning style of youngsters is a major key to designing teaching techniques to help him learn more effectively. Students with insufficient experience to deal with abstractions, which receive a great deal of emphasis now, will need more contact with real things and real people. Such experiences can be increased through practical laboratory activities and work-experience programs. In this way, students are placed in real life situations to which abstract and concrete study and thinking can be related.

We must recognize that careers today do not develop along planned predictable lines as they did a generation ago. We cannot assume that a person begins work in a particular field and then progresses in known sequences in a linear fashion. Today, careers are viewed as a flexible development with a person starting out with a few particular goals, but then moving easily into many careers, some seemingly unrelated. This occurs for several reasons. A person who is broadly educated is able to learn what he needs to know, within limitations, about the new job. Furthermore, there are many jobs that are so new that there are no formal preparation programs. Consequently, the self-prepared individual will become more common because of the rapidly developing new fields and because of his adaptability to those fields.

Industrial education in the secondary school must be concerned with the area of developing broad-based programs that lead to post high school specialized job preparation courses. One of the major problems facing the school is the provision of appropriate programs for the great variety of students without at the same time destroying human dignity and creating several levels and classes of citizens. Providing programs that contribute to a broad-base of fundamental skills with enough specificity to meet the needs perceived by individual students is the goal of industrial education.

Industrial and General education

Through the use of industrial education courses as a vehicle, students with concrete learning styles or those with limited academic potential are helped to achieve general learnings. The ability of teachers to capitalize on the inherent interests and activities of the course materials to provide students with an experience of success is a key reason for the effectiveness of industrial education. The discovery that success is possible and pleasant leads the student to strive for more such experiences. It is this desire of the individual for self improvement, for seeking and finding enjoyment and meaning in what he does that makes industrial education a liberal education as well. For through these activities the student broadens his knowledge and comprehension.

Skills, in reading, mathematics and other general education subjects are essential for acquiring the skill competencies necessary for most occupations. It is therefore important for the schools to increase their efficiency in teaching the fundamental subjects to all students and to increase their adjustment to the learning styles of all students.

Industrial Education - Defined

For the purpose of this paper, industrial education is used to describe a continuum of experiences, starting with the exploratory activities constituting the industrial arts program, then expanding to the development of skills related to families of occupations in the industrial education program, and finally culminating in on-the-job work experience.

Industrial arts provides the opportunity for the student to explore, reason, experiment and discover the realisms of the technological society in which he lives. The content of the program deals with industry, its organization, materials, processes, products, occupations and with the problems resulting from the technological nature of society. The methods used include group instruction,

seminars, line-production experiences, individual and group experiments as well as the unit approach to teaching.

Following the exploratory phase, a student may select courses leading to the development of a cluster of skills and concepts relating to a family of occupations. This group of courses called the industrial education program provides in-depth training in the development of skills in tool and machine operation, material processes, drawing and interpretive skills, and concepts of the power and electrical technologies. These courses may include work-study experiences as part of their content.

The program is broad-based with more conceptualization to allow for more flexibilty and for adaptation to future change. Specific occupational preparation should be left to post high school institutions except in cases where such programs are the only means of providing the motivation for students to stay in schools.

Program-Clientele

Industrial education is a part of a comprehensive school program. All students, both boys and girls, should have the opportunity to select some or many courses from industrial education depending on their interests and on the resources of the school. The learning styles and methods of instruction provide a change in approach to education that has much to offer any student and especially to those who have difficulty with abstractions in the cognitive domain.

Students may, through the exploratory courses of the industrial arts program, which is a part of industrial education, become aware of possible areas of vocational interest and pursue these in the skill development courses of the industrial education program.

The Need for Reorganization

The last seven years, during which time Alberta implemented the first generation vocational education courses, have provided new insights into the strengths and weaknesses of the program as it developed.

Many young people, especially boys, found the high school providing them with interesting and relevant courses. Teachers were quick to capitalize on the students' interest in the vocational courses and used them as a vehicle to make related academic learnings relevant to the students. Further, the concrete learning style that vocational courses generally cater to opened new avenues to knowledge for many. The program has been able to widen the crack in the

monolithic, austere front of the purely academic programs of the secondary school. With the majority of our young people continuing on in high school, the school was forced to accommodate the wide variations of intelligence, interest, emotional and physical make-ups that this clientele brought with it. The diversification of the program was necessary and timely.

Since the inception of the vocational programs in 1962 and until mid 1969, a period of seven years, 4,967 students had enrolled in the second year of the "32" vocational courses. About 1,000 had completed their first year of the "22' courses. (The "22" and "32" course are the ones qualifying for grants.)

The development of the composite high schools over a broad geographical area has helped equalize educational opportunity for most Alberta youths. It is estimated that 90% of the young people that want to take vocational courses have access to the programs wither by busses or through allowances provided by the school boards.

While there are many positive aspects, there are also goals that were not fulfilled. The high anticipations held for the accreditation of large numbers of students with the institutes of technology and the Apprenticeship Board did not materialize. Although the retention of potential dropouts could well have been reduced by the introduction of the program, there were other factors operative in society that could also have contributed to the holding power of the schools. Student enrolments in the senior courses declined by 50% betwen the "22" and "32" courses as credit load per course and specialization increased. Many of the rural vocational school administrators felt the need for greater flexibility in time requirements for courses to give them freedom to modify programs for the particular needs of students. The withdrawal of federal support of programs at the secondary school level shifted a somewhat greater financial burden onto the province.

On the basis of the observations made concerning the problems of (a) students being able to elect courses; (b) space utilization; (c) maintaining staff; and (d) financing the program, the following conclusion were drawn:

1. Many of the courses were meeting the needs of a group of students at the lower ability level.
2. Some highly technical courses were offered before the academic pre-requisites had been taken. e.g. electronics.
3. The time required to complete a full vocational program discouraged students who attempted matriculation.

4. The high degree of specialization in some courses resulted in staffing difficulties.
5. There was no differentiation between occupational and technical courses in regard to placement in the high school yet the latter often required academic prerequisites.
6. Accreditation arrangements with the institutes of technology were an advantage to relatively few students.
7. The articulation and accreditation with the Apprenticeship Board was satisfactory to Labor, but not many students selected this route.
8. The space and teacher utilization for the courses was insufficient in many schools.
9. The cost of maintaining and replacing equipment was a burden small districts found impossible to meet without reducing finances for other programs.
10. Grants, in addition to the foundation program funds, had to be continued for vocational education students.

On the basis of the observations and conclusions drawn, a list of basic principles was developed to provide the foundation for future planning.

Basic Principles for Program Development

The further commitment to the Alberta Industrial education program should be based on the following principles:

1. The development of cognitive skills, which are a major purpose of the school, must be supplemented by the provision for exploration of the occupational areas and an understanding of technology.
2. There should be one educational program in the high school. However, provision should be made for the great variety of students by giving them an opportunity to select one of several programs and/or routes appropriate to their interests without at the same time destroying human diginity and creating several classes of citizens. Students should be able to take courses in both academic, industrial and business education and obtain a diploma or matriculation standing.
3. The credit flexibility for industrial education programs should provide a range starting at twenty-five credits for a minimum program to a maximum determined by the school system.
4. School resources for learning should be supplemented by learning stations

in the community where students may seek new edcuational experiences through work.

5. Counseling services should be strengthened to assist young people in acquiring the leaning experiences best suited to their needs. Careful diagnosis and educational assessment of students for placement in courses should reduce student frustration and lead to a higher percentage of success.
6. Financial resources should be allocated to equalizing opportunity by providing the finances necessary to operate programs that meet the needs of the less capable in the school population.
7. The educational system should be responsible for carrying each student, who has not reached the age of eighteen, to the next step in his development. This may mean helping a dropout get a job, allowing him to take a part-time job while he is preparing for a new skill, or helping him gain entrance into a post-secondary insitution.
8. There should be a continuous evaluation, through follow-up of the students, on how well the educational system is meeting its objectives.
9. The courses making up the total program should provide a broad spectrum of skill development, i.e., skills that are basic to a family of occupations.

These principles may be summarized into the four aims or objectives of industrial education which follow.

Objectives of Industrial Education

1. To develop basic competencies, both academically and in work skills to enter either a job or a post high school institution for further education.
2. To provide the curriculum content in aiding students to develop fundamental tools and procedural skills that prepare them to enter a family of occupations.
3. To provide the curriculum content in aiding students to develop fundamental tools and procedural skills that prepare them to enter a family of occupations.
4. To provide the environment whereby students may develop sound attitudes and habits of work.

DIRECTIONS FOR ACTIONS

One of the most difficult problems an educator must face when making decisions on future developments is caused by lack of information due to non-existent or limited evaluation of on-going programs. Action must be taken immediately to implement an evaluation of the present vocational education program. The design of the study should be such that it provides annual feedback for continuous evaluation of how the participants in the program progress while in the courses and then for several years after they leave school. To expedite the development of a "second generation" industrial education program, the following plan for action is proposed.

Action One

Prepare a design for the evaluation ofd the vocational education program. This design should incorporate methods for obtaining data on the input into the program itself, and the output. An instrument for collecting the data must be prepared that is functional, on-going and standardized throughout the province.

While it would be preferable to have a complete evaluation report on past effectiveness of the program before developing new structures, the information that is available strongly indicates that planning for revisions must begin immediately. One of the areas where restructuring is necessary is in the development of an industrial education program which coordinates industrial arts and vocational education and which facilitates more interchange between the two.

Action Two

Study the courses of industrial arts, vocational education, home economics and business education to determine the areas where content is duplicated, amount of repition within a course, and the relevancy of the material.

This study should be done by a committee with members from each course area represented.

On the basis of the Course Evaluation Ad Hoc Committee's finding, the Industrial Education Committee should then take further action.

Action Three

Develop a model for a coordinated industrial arts and vocational education

program and submit for approval to the Secondary School Curriculum Board. The total program will be called Industrial Education, but keeping its two

Following the report of the Course Evaluation Ad Hoc Committee, a distinctions are in the area of (1) objectives; (2) types of facilities and equipment required; and (3) variation in competencies required by the teacher.

Following the report of the Course Evaluation Ad Hoc Committee, a committee called the Industrial Education Structure Ad Hoc Committee will be appointed with duties to:

1. Review the reports of the Course Evaluation Ad Hoc Committee and the Program Evaluation Ad Hoc Committee.
2. Develop a new structure for a coordinated industrial arts-vocational education program.
3. Define objectives, types of courses needed, basic content, time required (credits), prerequisites, and interchange points.

The work done by the Industrial Education Structure Committee will be reviewed by the Industrial Education Curriculum Committee and recommendations made for further action to the Secondary School Curriculum Board. On the basis of their approval, further action may be taken.

Action Four

Make all course revisions necessary to conform to the new program structure.

It is anticipated that at this point the objectives and structure will be clearly defined and that committees to work on subject content will be appointed. As this will involve many course areas, priorities for revision will need to be set and the work distributed over three years. These committees will report to the Industrial Education Committee to have their progress reviewed and to receive further direction. Contact should be made with the Worth Commission at this time for recommendations from them.

The course revision committees will be structured on a regional basis to allow them to coordinated their work on a continuing procedure. Advisory committees composed of members from industry, commerce and higher education will be appointed to work with the curriculum development committees.

Action Five

Develop equipment lists and laboratory designs to facilitate the implementation of the courses.

Equipment lists will be prepared by the curriculum committees in each course area, subject to review by the Industrial Education Committee.

Action Six

The program of teacher preparation will need to be reviewed with the university and changes implemented where needed.

Action Seven

Each revised course will be tested in a number of selected schools before being authorized for general use.

Action Eight

The total industrial education program with course content, evaluation procedures, equipment lists, facility requirements, and cost estimates for the province will be submitted for approval to the Secondary School Curriculum Board.

Action Nine

General implementations of the courses in Alberta will be started as course tests are completed. In-service education programs of many kinds should be held. These could include:

- Institutes
- Video-taped presentations
- Saturday workshops.

Action Ten

Evaluation of the program to provide constant feedback into the system must be continual process. Modifications based on the feedback can them be programmed immediately.

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